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### THE CREATION AND VALIDATION OF A PERCEIVED ANONYMITY SCALE BASED ON THE SOCIAL INFORMATION PROCESSING MODEL AND ITS NOMOLOGICAL NETWORK TEST IN AN ONLINE SOCIAL SUPPORT COMMUNITY

By

Haejin Yun

### A DISSERTATION

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### ABSTRACT

# THE CREATION AND VALIDATION OF A PERCEIVED ANONYMITY SCALE BASED ON THE SOCIAL INFORMATION PROCESSING MODEL AND ITS NOMOLOGICAL NETWORK TEST IN AN ONLINE SOCIAL SUPPORT COMMUNITY

By

### Haejin Yun

The rapid development of communication technologies has increased attention to the research construct of anonymity. This study redefined anonymity as perceived anonymity based on research gaps in three major theories of computer-mediated communication (CMC) and empirical studies in Social Identity of Deindividuation (SIDE) theory and group decision support systems (GDSS) research. The redefined construct of perceived anonymity adopted the Social Information Processing (SIP) model's approach to CMC. Two competing models of perceived anonymity affecting online public disclosure – a deindividuation model and a SIP-based model -- were built and compared for the predictive validity test.

The scale validation and the nomological network test were performed with data from a real online social support community, *MissyUSA*, an online community for married Korean women living in the U.S.A. A total of 301 members completed the online questionnaire. The data was analyzed with structural equation modeling.

The results showed that the perceived anonymity construct has a threedimensional hierarchical structure, consisting of self-anonymity (SA), other-anonymity (OA), and discursive anonymity (DA). The SIP-based model was supported with perceived anonymity negatively affecting online public disclosure. Need for social support negatively affected all three sub-dimensions of PA, and increased online public disclosure. A multiple group analysis by group identification (GI) revealed that the sizes of path coefficients were comparable across the groups, which suggested that there was no interaction effect of group identification. A secondary analysis demonstrated that perceived anonymity was not bounded by technical anonymity (defined as nominal anonymity), supporting the notion that technological conditions do not determine the mental state of online community members. Although anonymity perceptions decreased evaluation concern, the latter did not mediate between perceived anonymity and online pubic disclosure. The data was also tested for reverse paths from online public disclosure to the three sub-dimensions of perceived anonymity. Online public disclosure decreased SA and DA, but not OA.

The present study attested to the theoretical applicability and predictability of the SIP model over other CMC theories. First, it was confirmed that the model, which usually has been applied in the interpersonal or small group context, can be expanded to embrace large group CMC, that is, members' public communication in online communities. Second, only the SIP model was able to predict the negative relationship between perceived anonymity and online public disclosure. Theoretical and practical implications of the study follow, together with limitations of the study.

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#### "The fear of the Lord is the beginning of knowledge." (Proverbs 1: 7)

### TABLE OF CONTENTS

LIST OF TABLES	
LIST OF FIGURES	:
INTRODUCTION 1	
CHAPTER 1	
REDEFINING ANONYMITY4	•
Identifying Research Gaps4	•
Research Gaps in Three Major Computer-Mediated Communication Theories4	•
Theoretical Gaps in Empirical Studies in Social Identity of Deindividuation	
Theory and Group Discussion Support System Research 10	)
Redefining Anonymity as Perceived Anonymity	,
Theoretical Significance of Perceived Anonymity	)
CHAPTER 2	
MODELING PERCEIVED ANONYMITY AND ONLINE PUBLIC DISCLOSURE	
IN AN UNLINE SOCIAL SUPPORT COMMUNITY	
Defining Online Public Disclosure	•
Self-Disclosure in General	
Unline Public Disclosure	,
Perceived Anonymity Affecting Unline Public Disclosure	
SID Deced Model	
SIP-Based Model	
SID Deced Model Despecification of Deindividuation Model	
SIT-Based Model, Respectification of Demotviduation Model	
CHAPTER 3	
METHODS 52	
Research Site	
Initial Item Generation and Refinement	
Scale Validation and Nomological Network Test	ļ
Measures	ļ
Data Collection	ļ
Data Analysis	
CHAPTER 4	
RESULTS	
Exploratory Factor Analysis on Perceived Anonymity64	
Confirmatory Factor Analysis on Perceived Anonymity	
Perceived Anonymity Affecting Online Public Disclosure75	
Multiple Group Analysis 80	ł

Secondary Analysis	83
Comparison between Perceived Anonymity and Technical Anonymity	83
Separate Paths from Self-, Other-, and Discursive Anonymity to	
Online Public Disclosure and Evaluation Concern	85
Reverse Paths from Online Public Disclosure to Perceived Anonymity	85
CHAPTER 5	
DISCUSSION	88
Summary of Results	88
Contributions of the Study	89
Theoretical Contributions	89
Practical Implication	95
Limitations and Future Research	96
Perceived Anonymity Affecting or Affected by Online Public Disclosure?	96
External Validity and Reliability	96
Different Functions of Self-Disclosure	99
Explaining the Unexplained	99
Conclusion	101
APPENDICES	103
REFERENCES	146

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### LIST OF TABLES

Table 1-1.	Anonymity Definitions by CFO, SIDE and SIP	9
Table 1-2.	Examples of Anonymity Manipulations	16
Table 1-3.	Types of Identity Information	25
Table 2-1.	Relational Developments in CFO, SIDE, SIP and Hyperpersonal Perspective	44
Table 3-1.	Candidate and Final Items by Concept	56
Table 3-2.	Characteristics of Subjects	61
Table 3-3.	Correlations, Means and Standardized Deviations for Scales	63
Table 4-1.	Factor Loadings – Five-Factor Solution	65
Table 4-2.	Factor Loadings – Three-Factor Solution	66
Table 4-3.	Fit Indices by Model	70
Table 4-4.	Modification Indices by Model	70
Table 4-5.	CFA Results	73
Table 4-6.	Convergent and Discriminant Validity	73
Table 4-7.	Final Items by CFA	75
Table 4-8.	Results by Hypothesis	80
Table 4-9.	Multiple Group Analysis – Low vs. High GI	81
Table 4-10.	Mean Differences by Technical Anonymity	84

### LIST OF FIGURES

Figure 1-1.	Hierarchical Dimension of Perceived Anonymity	
Figure 2-1.	Deindividuation Model of Perceived Anonymity Affecting Online Public Disclosure	41
Figure 2-2.	SIP-Based Model of Perceived Anonymity Affecting Online Public Disclosure	
Figure 2-3.	Refined SIP-Based Model	51
Figure 4-1.	Scree Plot of First EFA	67
Figure 4-2.	Final CFA Model (Model CFA PA-2-4)	71
Figure 4-3.	Deindividuation Model	77
Figure 4-4.	SIP-Based Model	
Figure 4-5.	Refined SIP-Based Model	79
Figure 4-6.	Multiple Group Analysis by Group Identification	82
Figure 4-7.	Separate Paths from Self-, Other-, and Discursive Anonymity to Online Public Disclosure and Evaluation Concern	86
Figure 4-8.	Reverse Paths from Online Public Disclosure to Perceived Anonymity	87
Figure 5-1.	Perceived Anonymity and Technical Anonymity	91

#### INTRODUCTION

Thanks to the rapid development of communication technologies, scholarly interest in research on anonymity or anonymous communication has developed (Anonymous, 1998; Detweiller, 1993; Williams, 1998). Examples of anonymous communication – for now, defined as communication in which the identity of the source is lacking -- abound in the history of face-to-face and traditionally-mediated communication: anonymous letters to newspaper editors, anonymous authorship, anonymous reporting to police departments, church confession, whistle blowing on governmental abuses, and the like. All such examples show that people use anonymity in situations where revealing some information is considered potentially damaging to themselves.

Anonymity is a primary component of several communication technologies, including group decision support systems (GDSSs), anonymous electronic remailers, computer-based bulletin board systems (BBSs), and Internet chat rooms. A sense of anonymity brought by such technologies to users is regarded as one of the factors for a distinctive communication behavioral pattern in computer-mediated communication (CMC)<sup>1</sup>: People tend to be more disinhibited when communicating online (Suler, 2002; Joinson, 1999). People say and do things in cyberspace that ordinarily they would not say or do face-to-face. They express themselves more openly. Such a phenomenon is called the "disinhibition" effect. The effect presents a double-edged sword: It can be extreme flaming, or unusual kindness in the online world.

<sup>1</sup> The use of CMC as used in the present study refers to text-based computer technologies unless otherwise specified.

On the positive side of the "disinhibition" effect is the ever-increasing number of online social support communities (OSSCs) (Yun et al., 2004). Traditionally, face-to-face mutual self-help groups such as Alcoholics Anonymous have emphasized the importance of confidentiality (not discussing the circumstances of another member without direct consent) (The Self-Help Resource Centre, 2003). The identity of members should not be revealed to outsiders. With the increased possibility of protecting privacy through anonymous communication (Walther & Boyd, 2002), people now do not hesitate to gather online and exchange support with similar sufferers. Anonymity differs from confidentiality in that in the former the identity of an anonymous source is not known to anyone whereas in the latter the source is known to a limited number of others (Anonymous, 1998). Online anonymity increases people's willingness to reveal themselves at deep levels, which is a major contributing factor to highly caring and supporting relationships found in online social support communities (VanLear, Sheehan, Withers, & Walker, 2005; Klaw, Heubsch, & Humphreys, 2000; Phillips, 1996). It has been reported repeatedly that CMC can be characterized by high levels of self-disclosure (Joinson, 2001b; McKenna & Bargh, 1998; Parks & Floyd, 1996). Tensions between privacy and emotional closeness through self-disclosure seem considerably reduced in cyberspace (Ben-Ze'ev, 2003). Via reciprocal self-disclosure, those afflicted by illnesses, addiction, or other traumatic events can build intimate and supportive relationships with strangers online (Radin, 2001; Tichon & Shapiro, 2003).

Despite many studies examining perceived similarities and differences in communication features between CMC and face-to-face (FtF) interactions, few studies attempted to explicate the concept of anonymity itself, and to test it empirically. Further, although there is anecdotal evidence that anonymity in CMC seems to encourage self-

disclosure in online social support communities (OSSC), the connection between anonymity and self-disclosure in OSSCs has been assumed, but not questioned in terms of what theory can explain the phenomenon.

This study sought to advance the current understanding of anonymity in CMC and to examine its role in online social support communities (OSSC). The study first addresses theoretical and empirical research gaps in previous studies of anonymity in CMC. The construct of anonymity is redefined based on identified research gaps and tested with data from real OSSC participants. For the predictive validity of the redefined construct, a nomological network model is built that explains the relationship between anonymity and self-disclosure in OSSCs. The literature review, therefore, consists of two parts: redefining anonymity, and modeling anonymity and online self-disclosure in OSSCs. The guiding theoretical framework is the Social Information Processing (SIP) model (Walther, 1992). The literature review details how the SIP model contributes to redefining of the construct and to modeling anonymity and online self-disclosure in an online social support community.

### CHAPTER 1

#### **REDEFINING ANONYMITY**

What is anonymity? The present study defines anonymity as a perceived lack of identity information that would help communicators recognize each other. This section presents the explication of the anonymity concept based on gaps in previous anonymity research. First, a theoretical guide on how to redefine the concept is provided by reviewing three major theoretical perspectives of CMC, the Cues-Filtered-Out (CFO) approach, Social Identification of Deindividuation (SIDE) theory, and the Social Information Processing (SIP) model. Then, a more detailed analysis of previous empirical studies, especially SIDE and GDSSs studies, develops a framework on which the explication is based. Finally, the concept of perceived anonymity is further refined via five types of identity information and two anonymity sub-dimensions.

#### Identifying Research Gaps

### Research Gaps in Three Major Computer-Mediated Communication Theories

There are three major theoretical perspectives to CMC: The Cues-Filtered-Out (CFO) approach, Social Identification of Deindividuation (SIDE) theory, and the Social Information Processing (SIP) model. Only SIDE theory explicitly includes the concept of anonymity in its research paradigm among the three perspectives. However, close examinations of the other two theories enable us to infer how each theory would have defined the anonymity concept.

Theories that belong to the first theoretical approach are the Social Presence model (Short, Williams, & Christie, 1976), Media Richness Theory (Daft & Lengel, 1984, 1986), and the Reduced Social Cues approach (Sproull & Kiesler, 1986). These theories all focus on the reduction of non-verbal cues as the critical difference between CMC and face-to-face (FtF) channels. The effects of the medium are determined by its technical features (i.e., bandwidth restrictions) and are believed inherent, constant and context invariant. These theories concur that CMC is impersonal and appropriate for taskoriented communication. Further, the lack of social context cues reduces the impact of social norms, therefore leads to deregulated, antisocial behavior such as flaming. This group of theories represents an early theoretical perspective of CMC in the 1970s and 1980s. Although these early CMC theories did not pay attention to the anonymity concept itself, their focus on the absence of nonverbal social cues in CMC, as opposed to in FtF interactions, might have led researchers to define anonymity as a lack of co-presence with, or invisibility of, communication partners. The more CMC users can sense each other as if they interact face-to-face, with assistance of communication technologies, the more they perceive they can identify each other.

The second theoretical perspective, SIDE theory, arose in the 1990s partly as a response to the CFO approach. The original framework of the theory was designed to model social influence processes in crowds (Reicher, 1984, 1987), not for CMC. The application of the theory to CMC started in the mid 1980s, and the first study on group polarization was published in 1990 (Spears, Lea, & Lee, 1990). Rather than focusing on the effects of reduced social context cues, a group of European social psychologists in

CMC redirected their theoretical attentions to the concept of anonymity. They also introduced another important factor to their CMC studies: group identity salience (Lea & Spears, 1991; Spears & Lea, 1992; Spears et al., 1990). The main point is that whereas CMC indeed may filter out many social context cues that individuate people, group identity cues are delivered relatively independently of bandwidth restrictions, and shift people's self focus from personal to group identity, affecting their definition of the communication situation. According to SIDE theory, anonymity refers to whether or not CMC users can identify each other. The theory employed different forms of anonymity. Visibility or physical anonymity concerns itself with whether or not CMC users are separated from each other in different locations. Visual anonymity refers to whether or not they are provided with visual channels such as real time video conferencing systems or pictures on computer screens. Nominal anonymity is defined as whether or not they use their real names or usernames, or no personal identifiers are assigned. Biographical anonymity refers to whether or not they receive detailed information about each other such as gender, age, hobby, major, and so on. The differential effects of these varying forms of anonymity are yet to be investigated.

There are two major differences between the CFO approach and SIDE theory. First, SIDE theory argues that anonymity in CMC does not lead always to anti-normative, disinhibited behaviors. When group identity is salient, anonymity functions to further increase group identity by reducing attention to individual differences, the so-called "depersonalization" effect. As a result, group normative behaviors increase. Antinormative behaviors occur only when personal identity is salient instead of group identity, when a group norm is not clear, there is no consensus about the norm, or the norm is perceived as an out-group's, not an in-group's (Postmes, Spears, Lea, & Reicher, 2000).

The second difference is the level of communication contexts on which each theory focuses. The CFO approach has been applied to interpersonal or group communication contexts while SIDE theory has examined group communication exclusively. Studies of the CFO approach examined both individual and group level outcomes while SIDE theory focused on group outcomes such as conformity to group norms and group coherence. Methodologically, CFO researchers employed both field studies and experiments while SIDE theorists preferred experiments.

The third theoretical perspective, the SIP model, was also introduced in the early 1990s (Walther, 1992). Like SIDE theory, the SIP model also criticized the CFO approach's deterministic viewpoint of CMC that bandwidth restrictions remove social context cues, which makes CMC impersonal. Based on the impression formation literature, the SIP model argues that bandwidth restrictions and reduced social context cues in CMC delay, rather than remove, social information exchange. The crucial factor is time. Over time, people learn how to verbalize social context cues that, offline, are non-verbal. CMC users develop an interpersonal epistemology, which refers to a distinctive representation of the communication partner. It is an individuating knowledge gained through ongoing interaction. If there is sufficient time, the differences between CMC and face-to-face communication diminish. Anonymity was not the concept of interest in the SIP model. However, its acknowledgement of interpersonal knowledge increasing over time hints that anonymity might be defined as the lack of identity information exchanged between CMC users that would help them recognize each other.

Walther (1992) argued that impersonal effects of CMC may be limited to initial interactions among unacquainted communicators, by pointing out inconsistent findings between laboratory and field studies in the CFO approach. Walther proposed longitudinal

experiments. SIP studies usually involved small group contexts, and focused on individual outcomes in relational communication such as immediacy, trust and dominance (Walther & Burgoon, 1992), and anti-social communication behavior (Walther, Anderson, & Park, 1994).

The SIP model and SIDE theory agree with each other, arguing against the fixed effects of CMC implied by the CFO approach. There also are some differences between the two. In terms of the central concept of interest, the SIP model focuses on the effects of reduced social context cues like the CFO approach, while SIDE theory focuses on the concept of anonymity resulting from reduced social context cues. In addition, whereas SIDE researchers employed one-shot experiments, SIP researchers preferred longitudinal experiments. A comparison of the three theoretical perspectives is presented in Table 1-1.

The present study agrees with SIDE theory and the SIP model's argument that the effects of CMC are not technologically determined. SIDE theory emphasizes the importance of group salience for such argument whereas the SIP model focuses on communicator adaptability to limited bandwidth. By defining anonymity in terms of objective technological features of CMC, however, the SIDE model still holds an attribute of technological determinism. Anonymity manipulations, such as whether real names or user names are used, whether or not biographic database is provided, and whether or not video conferencing systems are equipped, are given to experimental and control groups, and SIDE experiments do not pay attention to how people adjust to such conditions over time. Contrarily, the SIP model underscores communicators' adaptability to technical features of CMC and maintains that people are not bound by such features. Adopting the SIP model's viewpoint, the present study defines anonymity as a perceptual variable. Perceived anonymity refers to a perceived lack of identity information exchanged among

CMC users. Anonymity perceptions are not fixed, but vary according to the degree to which CMC users develop interpersonal epistemology about each other and to which communicators adapt to CMC over time.

	CFO	SIDE	SIP
Main argument	CMC leads to impersonal and anti- normative communication behavior.	Reduced social cues are not the only factor affecting (group) interaction in CMC; identity cues (group <i>vs.</i> personal) are also important. Anonymity in CMC may lead to group normative behaviors.	Differences between CMC and FtF lie in rates of social information processing. Given sufficient time, the differences diminish.
Focus of Interest	Lack of Social Context Cues; Bandwidth restriction of medium is inherent and context invariant	Group Salience; Anonymity	Lack of Social Context Cues; People adapt to bandwidth restrictions
Communication Context	Interpersonal, Group	Group	Interpersonal, Group
Outcome level	Individual, Group	Group	Individual
Preferred Method	Field studies, Experiments	One-shot experiments	Longitudinal experiments
Definition of Anonymity	Lack of co-presence	Visibility, Visual anonymity, Nominal anonymity, Biographical anonymity	Perceived lack of identity information exchanged

Table 1-1. Anonymity Definitions by CFO, SIDE, and SIP

Note. CFO, Cue-Filtered-Out approach; SIDE, Social Identity of Deindividuation theory; SIP, Social Information Processing model

## <u>Theoretical Gaps in Empirical Studies in the Social Identity of Deindividuation (SIDE)</u> <u>theory and Group Discussion Support Systems (GDSS) Research</u>

Although commentaries on Internet anonymity abound (Nissenbaum, 1999; Wayner, 1999; Lee, 2005), the empirical scholarship on anonymity comes from SIDE theory and GDSS research. By allowing anonymous communication, GDSSs were expected to increase idea generation and improve the quality of decision making by liberating participants from social evaluations (Postmes & Lea, 2000). Contrarily, SIDE theory draws attention to the role of anonymity in increasing the salience of the group. From the viewpoint of SIDE theory, GDSS research adopted the CFO approach that anonymity diminishes the social influence of the group over the individual. Despite such difference, the two streams of research share common weaknesses in defining anonymity. These weaknesses mainly stem from their common methodological approach, but generate conceptual drawbacks.

Depending on experimental manipulations, anonymity has been operationalized as a dichotomous variable. Various experiments constrained anonymity to visibility (or physical proximity), and visual or nominal anonymity (Barreto & Ellemers, 200b; Douglas & McGarthy, 2001, 2002; Lea, Spears, & de Groot, 2001; Postmes, Spears, & Lea, 2002; Reicher, Levine, & Gordijn, 1998; Sassenberg & Postmes, 2002). That is, researchers manipulated it by not showing a communication partner's picture, name or username on the computer screen. Alternatively, subjects communicated with each other from separate rooms or in one lab together (Siegel, Dubrovsky, Kiesler, & McGuire, 1986; Sia, Tan, & Wei, 2002; Connolly, Jessup, & Valacich, 1990; Jessup, Connolly, &

Galegher, 1990; Jessup & Tansik, 1991; McLeod, Baron, Marty, & Yoon, 1997; Sosik, 1997).

Recent theorizing on anonymity (Anonymous, 1998; Hayne & Rice, 1997, Marx, 1999; O'Sullivan, Rains, & Grabb, 2001; Pinsonneault & Heppel, 1997-1998) argues that this experimental approach is limited in three aspects. First, it only allows researchers to examine objective features of communication technology. Subjective perceptions of anonymity by communicators have been ignored. Also, the absence or presence of technological features only makes the concept dichotomous while the subjective perceptual dimension of anonymity renders it a continuous variable. Hayne and Rice (1997) distinguished social and technical anonymity. Technically anonymous CMC takes place when communication technologies are set to remove identifying information about sources from messages. Social anonymity is defined in terms of the ability to use the stylistic characteristics available in messages to make attribution of authorship. The latter type of anonymity can change over the course of communication, and does not necessarily correspond to technical anonymity. Social anonymity is a subjective experience of technical conditions, which varies considerably according to individuals in the same technical condition. SIDE research and GDSS studies implicitly equated the subjective dimension with the technical dimension.

The subjective perception approach embraces partial anonymity as well as perfector non-anonymity (Anonymous, 1998; Hayne & Rice, 1997; O'Sullivan et al., 2001). Anonymous (1998) emphasized the importance of discursive anonymity over physical anonymity in verbal communication. Discursive anonymity concerns whether a message can be connected to its source whereas physical anonymity refers to conditions wherein one is physically separated from a message source and, therefore, cannot sense presence

of the source. Discursive anonymity has two key dimensions which determine its degree: source specification and source knowledge. Source specification refers to the extent to which a message source is distinguished from other possible sources. Source specification would vary on a continuum between when a message can be attributed to a specific person and when to a group of individuals. Source knowledge concerns the degree of familiarity between the source and the receiver. It would range from complete strangers to close friends. Partial anonymity exists when either a message source cannot be specified individually or when there is a moderate to low level of knowledge about a message source. For example, course evaluation from a large course is partially anonymous because the professor knows the class from which the evaluation came (source knowledge) but cannot attribute individual comments to individual students.

Source specification is analogous to Valacich, Dennis and Nunamaker's (1992) content anonymity, and Licker's (1992) source dissociation. Content anonymity refers to the degree to which one can identify a message source by recognizing the author through an identifier embedded in the message. Source dissociation is defined as a perception that others cannot identity one as the source of specific messages. Social anonymity, source specification, content anonymity, and source dissociation all attend to the connection between a source and a message, and entail varying degrees of subjective anonymity perceptions.

Another overlooked possibility is that anonymity is a multi-dimensional concept (McLeod, 1997). Pinsonneault and Heppel (1997-1998) suggested five components (i.e. lack of identification, diffused responsibility, proximity, knowledge of other group members, and the confidence group members have in the system). Marx (1999) specified seven components (i.e. legal name, locatability, pseudonyms linked to name or action,

pseudonyms not linked to name or location, social categorization, pattern knowledge, and symbols of eligibility/non eligibility) of the concept. Among the five components by Pinsonneault and Heppel (1997-1998), lack of identification corresponds to Anonymous' (1998) source specification, knowledge of other group members to source knowledge, and proximity to physical anonymity. Diffused responsibility and system confidence are antecedents rather than components of anonymity. When individuals perceive that responsibilities are diffused to all members of the group, and when they trust that the technical system really guarantees anonymity, they feel more anonymous. Among the seven dimensions by Marx (1999), pattern knowledge is worth mention. Pattern knowledge refers to distinctive behaviors or communication styles that can be attributable to a particular person without actual identity or locatability. He argues that "being unnamed is not necessarily the same as being unknown" (p.101). Like those we may encounter regularly on a commuter train, we do know something about those we meet online from their patterns, styles, or tones of online communication, but do not know their real names, appearance or any specific personal information. It parallels social anonymity by Hayne and Rice (1997), which emphasizes stylistic characteristics or evaluative tones in messages. Empirical studies in GDSS and SIDE research have controlled one, or two at best, anonymity conditions (see Table 1-2). Multiple aspects of anonymity generate infinite degrees of anonymity that also correspond to the continuous, subjective conceptualization.

Third, anonymity has two aspects according to who is unidentifiable to whom. Self-anonymity concerns identifiability of self to others. Other-anonymity refers to whether or not others are identifiable to self. SIDE theorists also pointed out this possibility of confounding effects (Sassenberg & Postmes, 2002; Spears & Lea, 1994).

Self-anonymity is relevant when a message source perceives his or her own identity is unknown while other anonymity is what a message receiver experiences when responding to a message from an unidentifiable source (Anonymous, 1998). Although the two aspects are related and co-present in most real-life situations, they are conceptually distinctive and lead to different social influences in groups. First, other-anonymity increases group salience by obscuring individual differences among group members, which in turn increases group attraction and conformity to group norms. SIDE research calls this process the cognitive dimension. When we cannot differentiate others based on individuating characteristics, we tend to depend on commonalities and perceive others representative of their group. Highlighted similarities between self and others as members of the same group leads to higher group attraction and conformity. Second, the other social influence process concerns self-anonymity. When people perceive that others cannot recognize them, they sense lower accountability about their behaviors or comments. Self-perception as a unique individual rather than as a group member decreases group conformity (Lea, Spears, Watt, & Rogers, 2000). This latter process is called the strategic dimension. The two processes have opposing effects on group outcomes and counterbalance each other. There would be interactions between the two dimensions. For example, identifiability of others tends to increase anonymity of self. That is, people tend to perceive that they are more unidentifiable when others are visible to them than when others are not. Knowing themselves to be more anonymous than others reduces the sense of being a member of the group.

A theoretical implication of the self *versus* other distinction is important when it is applied to online communities. It is known that a majority of online community members are "lurkers" who read others' messages, but do not contribute to their

community (Cummings, Butler, & Kraut, 2002; DeSanctis & Roach, 2002; Nonnecke, 2000; Yun et al., 2004). For them, the strategic process comes into play because of higher self-anonymity than other-anonymity.

SIDE theory's dichotomous experimental approach might have stemmed from its group psychology orientation. Its experimental treatments are typical of those of social identity or social categorization theory, such as emphasizing subjects' experimental group assignments to prime social identity salience (Turner, Hogg, Oakes, Reicher, & Wetherell, 19987). Such methodological approach might have rendered SIDE theory another dichotomous approach to anonymity. In GDSS research from the management information systems field, anonymity is a fixed technical feature of text-based computer-conferencing tools to enhance group decision-making. Although the origins of the two research traditions differ, their methodological approaches resemble each other. Efforts to redefine anonymity as a perceptual variable should include how to resolve the limitations mentioned above. The present study further refines the concept by incorporating multiple components of anonymity and the directional sub-dimensions between self and other into a new conceptualization.

[	GDSS		Self- or
	or		Other-
Studies	SIDE	Manipulations	Anonymity
Reicher &	SIDE	Experiment 1: Visibility: Subjects are separated by a	Mixed
Levine, 1994		screen on a round table, or not.	
		Experiment 2: Nominal Anonymity: Subjects provide	Self-
		their own names, or usernames or codes.	Anonymity
Postmes,	SIDE	Study 1: Nominal and Visual Anonymity: Subjects are	Mixed
Spears, &		identified with initials and a group tag only, or first	
Lea, 2002		names, a group tag and pictures.	
		Study 2: Visual Anonymity: Subjects are identified	Other-
		with pictures and usernames, or usernames only.	Anonymity
Douglas &	SIDE	Study 1: Nominal and Geographic Anonymity: Subjects	Self-
McGarty,		use full names and countries of residence, or none.	Anonymity
2002		Study 2: Nominal and Course Anonymity: Subjects use	Self-
		full names and course titles enrolled, or not. Also,	Anonymity
		subjects are fold that their messages can be linked to	
Damata P	SIDE	Europeriment 1, 6, 2: Viewel Anonymity: Subjects are told	Salf
Ellemers	SIDE	that their nictures will be displayed on computer	Anonymity
2000b		screens or not Subjects are also told that they will be	Anonymity
20000		required to justify their responses at the end of	
		experiments	
Douglas &	SIDE	Study 1: Nominal Anonymity and Traceable Email	Other-
McGarty.		Address: Internet Newsgroup messages with real names	Anonymity
2001		and email addresses, or aliases or no email addresses.	' monymery
		Study 2 and 3: Nominal and Geographic Anonymity:	
		Subjects provide their names and countries of	Self-
		residence, or not.	Anonymity
Sassenberg &	SIDE	Study 1 and 2: Visual Anonymity: Pictures of subjects	Both, but
Postmes, 2002		are shown, or not. Self- and Other-Anonymity are	not mixed
		separately manipulated.	
Lea, Spears,	SIDE	Visual Anonymity: Text-based computer-based	Mixed
& de Groot		conferencing system only or supplemented with two-	
2001		way real-time silent video.	
Sia, Tan, &	GDSS	Visibility:Face-to-face meeting, CMC meeting in the	Mixed
Wei, 2002		same room, or CMC meeting in a separate cubicle	
Taylor &	SIDE	Biographic Anonymity: An electronic biographic	Mixed
McDonald,		database of each group member is provided, or only	
2002		usernames of other members are provided	
Joinson, 2001	Neither	Study I: Visibility: Subjects in CMC arrive at different	Mixed
		umes and are separated in separate cubicies, and	
		subjects in face-to-face arrive at the same time and are	
		State Weller.	Other
		discussion partner's video, or not	
	I	עוזכעזאוטון אמנווכן ג אוטבט, טו ווטנ.	a monymuty p

Table 1-2. Examples of Anonymity Manipulations

Table 1-2. (continued)

[	GDSS		Self- or
	or		Other-
Studies	SIDE	Manipulations	Anonymity
Joinson, 2001	Neither	Study 3: Visual Anonymity: Other-Anonymity: A	Both, but
		video-conferencing picture of others on computer	not mixed
	1	screen: Self-Anonymity: Subjects arrive in a darkened	
		corridor and are led to a cubicle with a blackened	
		window, or arrive in a well-lit corridor and are lead to a	
		cubicle with a clear window	
Tanis &	SIDE	Visual and Biographic Anonymity: Portrait pictures of	Other-
Postmes, 2003		the partner are available or not, and Biographic	Anonymity
		information of the partner is available or not	
Siegel, et al.,	GDSS	Visibility, Nominal and Social Anonymity: Participants	Mixed
1986		are in different locations; Comments are labeled with	
		computer terminal numbers; Participants are ad-hoc	
		groups of students.	
Hiltz, et al.,	GDSS	Nominal and Social Anonymity: Participants are	Mixed
1989		labeled with pseudonyms; Participants are corporate	
		employees.	
Weisband,	GDSS	Nominal and Social Anonymity: Participants are	Mixed
Schneider,		labeled with pseudonyms, and are seated in the same	
Connolly,		room, but arranged not to see each other; Participants	
1995		are ad-hoc groups of students.	
Connolly, et	GDSS	Nominal Anonymity and Visibility: Contributions are	Mixed
al., 1990		tagged to names, or not; Participants are introduced to	
		each other in advance and physically co-present.	
Jessup, et al.,	GDSS	Nominal Anonymity and Visibility: Contributions are	Mixed
1990		tagged to names, or not; Participants are physically co-	
		present.	
Jessup &	GDSS	Nominal Anonymity and Visibility: Contributions are	Mixed
Tansik, 1991		tagged to names, or not; Participants are physically co-	
		present.	
Valacich, et	GDSS	Nominal Anonymity: Contributions are tagged to	Mixed
al., 1992		names, or not: Participants are introduced to each other	
		in advance.	
McLeod, et	GDSS	Nominal Anonymity and Visibility: Contributions are	Mixed
al., 1997		tagged to names, or not; Participants are physically co-	
		present.	
Cooper, et al.,	GDSS	Nominal Anonymity: Contributions are tagged to	Mixed
1998		names, or not.	
Sosik, 1997	GDSS	Visibility: Participants are physically proximate.	Mixed
George, et al.,	GDSS	Visibility, Nominal and Social Anonymity: Participants	Mixed
Easton, 1990		are seated separately; Real names are not linked to	
		comments; Participants are ad-hoc groups of students.	

Note. SIDE, Social Identity of Deindividuation theory; GDSS, Group Decision Support Systems

#### Redefining Anonymity as Perceived Anonymity

The anonymity construct was redefined as perceived anonymity based on research gaps identified in the previous section. It is a perceived lack of identity information that would help communicators to recognize each other. Perceived anonymity consists of two sub-dimensions – self- and other-anonymity. The self and other distinction concerns the direction of anonymity. *Self-anonymity* refers to a perceived lack of identity information about the self known to others. *Other-anonymity* involves perceptions of how much identity information about others the self can recognize. Perceived anonymity is a global construct that encompasses self- and other-anonymity. Therefore, there exists a hierarchical relationship between perceived anonymity and its two sub-dimensions as shown in Figure 1-1.

Figure 1-1. Hierarchical Dimension of Perceived Anonymity



Then, what is "identity"? Identity is the distinguishing character or personality of an individual. All information representing a mental image of a person comprises his or her identity. A person's online identity does not necessarily parallel his or her off-line identity. Online identity is what a person selects to present from a variety of identity cues about who he or she is off-line. In fact, it was noted that people do have multiple versions of the self off-line as well (Goffman, 1959; Jung, 1953). People exercise more than one mental image according to which facet of self is emphasized. People take on different personae according to different roles they assume in different situations. Internet communication made it easier to act on a particular persona, chosen from multi-faceted aspects of self. For example, I present myself as an enthusiastic but sometimes stressed doctoral student in *PHinisheD*, an online community for those who are working on a dissertation. In *MissyUSA*, another online community for Korean married women living in the United States, I act as someone's wife who has a nine-month old with complaints about in-laws in Korea. In *PhinisheD*, my ethnic and gender identity is not as important as in *MissyUSA*. Contrary to off-line, people possess a control over what to be presented about self online. Cyberspace is considered as a safe laboratory to experiment various personae without fear of disapproval by those in an off-line circle (Turkle, 1995). It can be an idealized version with desired qualities emphasized, or a hidden self that is not fully expressed in social life (Bargh, McKenna, & Fitzsimons, 2002).

Online identity is different from off-line identity in that it is re-composed with an emphasis on different aspects of self that are consciously or subconsciously selected according to its owner's social needs. This does not suggest that off-line identity is a true identity, and online identity is a false one. Rather, it is a matter of self-expression facilitated by anonymity on the Internet (Bargh, McKenna, & Fitzsmions, 2002). The SIP model also adopts this self-presentational viewpoint, stating that people try to manage self-images due to various motivations such as affiliation motive and dominance drive (Walther, 1992).

A person's self-anonymity perception depends on how much identity information

that signals his or her off-line identity has been presented to others in online interactions. There are two cases in self-representation – overrepresentation and misrepresentation. Overrepresentation concerns having some elements of truth about self amplified and others downplayed. Misrepresentation refers to providing false information about self. If a person omits some information about the self, or presents him/herself with fake information, his or her perceived self-anonymity is high. A person's other-anonymity perception is determined by how well he or she can discern online communication partners based on who they claim to be, that is, online identity. A person may detect a mismatch between online and off-line identity and suspect deception. It is a matter of trust among members, not of other-anonymity perception. Online communities grow based on trust among members that identity information exchanged is authentic. The revelation of a member's fabrication of an online persona greatly influences the sense of community (Donath, 1999; Birchmeier, Joinson, & Dietz-Uhler, 2005).

Then, what kinds of information may signal a person's identity in online communication? This study categorizes identity information into five types, based on Marx's seven types of identity knowledge (Marx, 1999). The categorization is complemented with other anonymity definitions in previous research (see Table 1-3). Marx's seven types of identity knowledge are legal name, locatability (e.g. a telephone number, a mail or email address), traceable pseudonym (symbols or nicknames that can be linked to legal names or locatability), non-traceable pseudonym (symbols or nicknames that cannot be linked to a person or an address), pattern knowledge (reference to distinctive behavior or communicative patterns that can be attributable to a particular person without actual identity or locatability), social categorization (identity information that does not differentiate the individual from others sharing them, e.g. gender, ethnicity,

religion, age, class, education, language and organizational memberships), and symbols of eligibility (symbols that tell its possessors could be entitled to have corresponding knowledge, skills and authorities and labels them as to be treated in a certain way example: titles, uniforms, certification).

The five categories of identity information the current study proposes are: name or pseudonym, locatability, biographic information, communication pattern and style, and audio-visual information. The degree to which a person reveals or obtains pieces of information in each type determines perceived anonymity. First, name or pseudonym corresponds to what SIDE theory refers to as nominal anonymity (Barreto & Ellemers, 2000a; Lea, Spears, Watt, & Rogers, 2000). Nominal anonymity seems to be at first glance a dichotomous variable. However, the use of first name only generates degrees of anonymity perceptions significantly different from the use of full name. Using a nickname further masks a person's nominal anonymity. In CMC, user names or screen names also signify nominal identity. Knowing a person's name or screen name does not necessarily mean full identifiability. In other words, people may identify others without knowing their names (Anonymous, 1998; Marx, 1999).

In interpersonal or small group CMC, nominal anonymity is a binary variable according to whether a CMC system allows them to interact without revealing real names or usernames. A small number of participants make it a matter of either-or-not conditions to distinguish different names. In the context of online community where a large number of members participate, however, even if a CMC system requires members to use names, members can rarely relate all known names to specific members. The longer a member's prior experiences in the community is, the more names the member can recognize. In this sense, nominal anonymity can be a continuous variable, especially in a large group CMC. Anonymity definitions in GDSS studies such as lack of identification (Pinsonneault & Heppel, 1997-1998), source specification (Anonymous, 1998), content anonymity (Valacich, Dennis, Nunamaker, 1992), and source dissociation (Licker, 1992) deal with nominal anonymity. That is, these definitions, commonly emphasizing a connection between a source and a message, were operationalized whether comments are tagged with names or pseudonyms.

Second, locatability is about answering a "where" question while nominal identity gives an answer to a "who" question (Marx, 1999). Various pieces of information may provide locatability cues in CMC. In addition to email addresses or homepage addresses which are the most representative cyber-locality information, people often include their mail addresses, telephone numbers and fax numbers in online signatures. Some anonymous online bulletin boards provide Internet Protocol (IP) addresses to prevent extremely flaming comments. Since IP addresses link only to a computer, not to the user of that computer, and may change whenever a new Internet connection is made when using commercial Internet services, these addresses are not completely traceable, but only provide temporary identification information. Even so, it provides online communicators with partial locatability. Domiciliary anonymity (lacking a traceable address) in SIDE theory parallels locatability.

Third, biographic information that would help characterize communicators also serves as identity information. Marx's social categorization and symbols of eligibility are included in this category. Some such information is demographic – gender, ethnicity, age – which may be discernible audio-visually. Other biographic information such as education, hobby and profession is not readily available through audio-visual information without other cues. Online signatures usually include such information through

organizational membership. Domain names in email addresses also provide hints as to what kind of organization the message sender belongs, or of which organization he or she prefers to be perceived a member. As Marx himself mentioned, this category does not provide individuating information, but, informs communicators of stereotypic characteristics that the other party might possess with a hint of group membership. However, as shown in SIDE theory, such information provides biographic details about communicators, although not so individuating as names or email addresses. Biographic information may categorize communicators, rather than individuate them, but it helps build a mental representation of communication partners better than does no information.

Fourth, Marx's pattern knowledge that also embraces behavioral pattern is trimmed to communication pattern and style, since behaviors are displayed and delivered through verbal communication in CMC. This category parallels source knowledge (Anonymous, 1998), social anonymity (Hayne & Rice, 1997), and knowledge of other group members (Pinsonneault & Heppel, 1997-1998). This information includes uses of certain acronyms, recurring mentions of certain topics, expressive tones and writing styles. Unlike the above categories of identity information, such information requires stable participation on the message receiver side. It reveals the more subtle side of personality unique to the message source.

The last type of identity information that Marx did not mention is audio-visual information. Audio-visual information is not unique to FtF communication. Although such information is limited in CMC, it is not impossible to have such information available in CMC. Some online communities allow (or require) users to upload pictures in biography sections so as to promote more intimate and trustful relationships among them. Physical appearances may be revealed through such option even though users may

provide false visual identities or manage their own outlooks. Also, video cameras and/or headsets mounted to personal computers deliver those pieces of information to communication partners. An avatar is an example of self-presentational visual information (Waldzus & Schubert, 2000; Kang & Yang, 2004).

Varying degrees in perceived anonymity are determined according to how much identity information in each category communicators perceive about each other. The more identity information they can recognize, the fewer the anonymity perceptions they sense.

Table 1-3. Types	of Identity Informa	ation						
Type	Information	Marx, 1999	SIDE	Pinsonneault	Anonymous,	Hayne &	Valacich,	Licker,
	Content			& Heppel, 1997-1998	1998	Rice, 1997	et al., 1992	1992
Name	Name,	Legal Name,	Nominal	Lack of	Source		Content	Source
	Username,	Traceable and	anonymity	identification	specification		anonymity	dissociation
	Screen name, or	non-traceable						
	Nickname	pseudoymn						
Locatability	Email address,	Locatability	Domiciliary					
	Homepage		anonymity					
	address,		(lacking a					
	IP address,		traceable					
	Mail address,		address)					
	Phone number,							
	or Fax number							
Biographic	Demographic	Social	Biogrphic					
information	information,	categorization	anonymity,					
	Profession,	and Symbols of	Geographic					
	Organizational	eligibility	anonymity					
	membership							
Communication	Uses of certain	Pattern		Knowledge	Source	Social		
Pattern and	acronyms,	Knowledge		of other	knowledge	anonymity		
Style	Recurring			group				
	mentions of			members				
	certain topics,							
	Expressive tones							
	and writing							
	styles						1	
Audio-Visual	Pictures, Avatar,		Visual					
Information	Video,		anonymity					
	Background							
	music							
# Theoretical Significance of Perceived Anonymity

Anonymity is defined as a perceived lack of identity information that would help communicators recognize each other. The five types of identity information and the two directional (i.e. self to other and other to self) sub-dimensions are incorporated into the refined conceptualization. What differences would the new definition of anonymity as a perceptual concept make in previous studies that employed a technically defined dichotomous conceptualization of anonymity in relation to self-disclosure?

Since most anonymity experiments recruited subjects with zero acquaintance and allowed interaction times of less than an hour, subjects were not given opportunities to overcome technical anonymity. According to the SIP model, anonymity perceptions do not depend on CMC systems. CMC users gradually decrease levels of perceived anonymity through communication. The degree to which anonymity perceptions decrease by adding the same amount of information exchanged about each other would be larger in CMC than in FtF interactions because the baseline perception is much lower in CMC than in FtF. Experimental conditions that were used to increase group salience (for example, the information that subjects are students in the same university *versus* in different universities) would function as additional (biographic) information that would lower anonymity perceptions much more when they interact through a CMC system than when they communicate face to face. It is suggested, therefore, that field studies that compare different anonymity conditions in the same CMC system examine the effect of perceived anonymity more correctly.

One SIDE experiment extended interaction time to two weeks and recruited subjects from a population of Internet users (Taylor & MacDonald, 2002). The

researchers examined main and interaction effects of identifiability (low or high) and salience (individual or group). Identifiability was manipulated by providing a biographic database containing details of each group member in the experimental group but not in the control group. Subjects communicated through the same CMC system. Contrary to predictions by SIDE and other online self-disclosure studies, it was found that the more that was known about group members (i.e. high identifiability), the more subjects selfdisclosed. There was also an interaction effect. That is, subjects self-disclosed the most in the high identifiability and group salience condition, the second most in the high identifiability and individual salience condition, then in the low identifiability and individual salience condition, and the last in the low identifiability and group salience condition. It can be inferred that, over the two weeks, subjects' anonymity perceptions decreased the most in the high identifiability and group salience condition and the least in the low identifiability and group salience. Interactions with identifiable members, coupled with heightened group membership, increased the sense that subjects knew each other. Group membership seemed to serve as additional information to other biographic information provided in the identifiable condition. In the low identifiable condition, on the contrary, group salience increased the impersonality of interaction that was already triggered by the absence of biographic information. As a result, subjects in the high identifiability and group salience condition perceived the lowest level of anonymity while the highest level of anonymity perception was induced in the low identifiability and individual salience condition.

This study suggests that anonymity perceptions technically imposed by CMC systems and those that have been overcome through communication have different effects on communication outcomes. Previous experimental studies on online self-disclosure

focused on technically generated anonymity perceptions, and did not examine differences in self-disclosure after subjects overcame their initial anonymity perceptions. Joinson (2001) manipulated only one type of technical anonymity, lack of co-presence in study 1 and visual anonymity in studies 2 and 3. The other types of identity information – name, locatability, biographic information, and communication pattern and style - were not provided in either condition at the beginning of experiments. Considering that anonymity perceptions are also determined by these different types of identity information, it can be argued that subjects' anonymity perceptions might not have paralleled the technical conditions. Further, the fact that the amount of self-disclosure was higher in the CMC condition than in the FtF condition and that the content of self-disclosure was biographic (for example, "I'm a psychology student") implied that subjects' anonymity perceptions decreased in the CMC condition more than in the FtF condition, over the experiments. Through exchanging biographic information about each other, they should have decreased levels of perceived anonymity, and subjects in the CMC condition decreased perceived anonymity more than those in the FtF conditions. Unfortunately, the experiments stopped short of exploring the effect of decreased anonymity perceptions on future self-disclosure.

It can be counter-argued that self-disclosure negatively affects anonymity perceptions rather than anonymity perceptions decrease self-disclosure. In other words, the direction of causation may be reversed. Contrary to previous studies' argument that anonymity increases self-disclosure via decreased public self-awareness (Joinson, 2001), subjects in such experiments might have been motivated to exchange more identity information to increase predictability about the behaviors of the self and the other, as Uncertainty Reduction Theory suggests. That is, subjects in CMC or unidentifiability conditions wanted to lower perceived anonymity because it brought to them uncertainty

about communication situations. Here, it should be noted that self-disclosure has a dimension other than the amount (or breadth) dimension, namely the depth dimension. Strangers are willing to share superficial information about each other, but not inner thoughts or feelings. People reveal such content when they can expect positive outcomes as a reward (Altman and Taylor, 1973). The breadth of self-disclosure would increase when CMC users meet for the first time in order to reduce uncertainty brought by perceived anonymity. It is not until they feel they know each other enough and are convinced that the other will positively respond to their revelations of the inner self that they start to talk about themselves at deeper levels. Therefore, the effect of perceived anonymity on self-disclosure would differ according to which dimension is the focus of interest.

Online social support communities are characterized by sympathetic messages. Members disclose even negative aspects of the self because they believe other members will respond supportively to their postings. Perceived anonymity is relatively low because they all are members of the same community, with similar life experiences. Sometimes, depending upon the individual contents to be revealed, members are uncertain how other members may reply. As they accrue more information about each other, they are more likely to become understanding of others' situations. Perceived anonymity is expected to decrease the tendency of online community members to reveal negative aspects of the self.

In the following chapter, two competing models of perceived anonymity are built and compared, namely a deindividuation model and a SIP-based model. Online selfdisclosure is redefined as online public disclosure in order to apply it to the context of online social support communities. The deindividuation model represents arguments in previous online self-disclosure studies maintaining that anonymity in CMC leads to

heightened self-disclosure compared to in FtF interactions. The SIP-based model, on the contrary, predicts lowered self-disclosure by perceived anonymity.

# CHAPTER 2

# MODELING PERCEIVED ANONYMITY AND ONLINE PUBLIC DISCLOSURE IN AN ONLINE SOCIAL SUPPORT COMMUNITY

In the previous chapter, the construct of anonymity has been redefined as perceived anonymity, based on the comparison of three major theories in CMC and the analysis of empirical studies in SIDE and GDSS. Based on the SIP model's argument that CMC users adapt to bandwidth restrictions, it was proposed that anonymity also should be redefined as a subjective concept of varying degrees. Two sub-dimensions of perceived anonymity and five types of identity information have been identified to redefine anonymity as a subjective and perceptual continuous variable.

The following section covers the second objective of this study, modeling perceived anonymity and online self-disclosure in an online social support community. Such modeling is an important part of scale validation. Cronbach and Meehl (1955) maintained in their seminal article on construct validity that a construct should be tested within a nomological network of antecedent and consequent variables in order to examine the predictive ability of its scale. A nomological network should be guided and built by a relevant theory. Modeling of perceived anonymity and online self-disclosure draws upon Walther's SIP model.

This chapter begins with defining online self-disclosure as online public disclosure in order to make the concept more relevant to the context of online social support communities which are characterized by excessive self-disclosing messages, compared to communities with other purposes (Campell, 2002; Preece, 1999; Radin, 2001). The

second section of the chapter discusses the ways in which previous studies on selfdisclosure in CMC might model perceived anonymity and online public disclosure ("deindividuation model"). The third section revisits the social information processing (SIP) model, and a competing model is specified, based on SIP ("SIP-based model").

#### Defining Online Public Disclosure

The present study builds a model of perceived anonymity and online public disclosure in an online social support community. The reasons for focusing on online social support communities are twofold. First, anonymity, which is the central construct of the present study, functions as a safety net for those who seek social approval from someone with similar distressing experiences. Those people, inevitably or voluntarily, reveal sensitive and intimate facts about themselves, expecting social validation and emotional relief in return (Campbell, 2002). Risking anticipated vulnerabilities, they also engage themselves in self-impression management. This represents a dialectical tension that all humans experience between expressiveness and protectiveness, disclosure and privacy (Rawlins, 1992), openness and closedness (Baxter, 1990), and ambiguity and clarity (O'Sullivan, 2000). People want both emotional closeness and personal boundaries, especially when they are distressed. Anonymity in CMC reduces such tension that is produced in pursuing the two contradictory goals, by providing self-presentational opportunities.

The second reason for online social support communities is that these communities are characterized by excessive self-disclosing messages, compared to communities with other purposes (Campbell, 2002; Preece, 1999; Radin, 2001). Self-disclosure seems to

function variously, to wit: response solicitation and emotional catharsis. Excessive selfdisclosure is a manifestation of the "disinhibition effect" in CMC (Suler, 2002). Therefore, the relationship between anonymity and self-disclosure can be examined most clearly in online social support communities. This section first defines self-disclosure in general from a social exchange perspective, then online public disclosure in particular.

#### Self-Disclosure in General

There have been inconsistencies in the conceptual definitions used in selfdisclosure research. Several earlier definitions exemplified how inconsistent they are. The most frequently cited definition of self-disclosure is "the act of making yourself manifest, showing yourself so others can perceive you" (Jourard, 1971). Worthy, Gary and Kahn (1969) defined the concept as "that which occurs when A knowingly communicates to B information about A which is not generally known and is not otherwise available to B." Cozby (1973) defined it as "any information about himself which person A communicates verbally to person B" (p.73). Goodstein and Reinecker (1974) restricted the use of the term to "verbal disclosures that are of a private nature and selectively revealed under only special circumstances" (p.198). Jourard's definition includes both verbal and non-verbal disclosing about the self. Therefore, it suggests that whenever people encounter another, they automatically disclose some aspects of themselves. Worthy, Gary and Kahn's definition emphasizes whether or not the discloser consciously or intentionally reveals. Cozby's definition limits the scope of empirical inquiry to verbally transmitted information about the self. Lastly, Goodstein and Reinecker's definition puts a restriction on the term by adding the private nature.

These inconsistencies reflect that the concept is multi-dimensional, not unidimensional. Chelune (1975) suggested five dimensions: amount or breadth, intimacy, duration or rate, affectiveness, and flexibility. Wheeless and Grotz (1976) proposed a different set of five dimensions: intention, amount, valence (positive/negative), honesty/accuracy, depth. More generally, as shown in Social Penetration Theory (Altman & Taylor, 1973) and according to Derlega and Chaikin (1977), self-disclosure has two dimensions: breadth and depth. Breadth refers to the number of topics covered, and depth to the intimacy level of the disclosure. Omarzu (2000) added the third dimension, duration, which refers to the amount of the disclosure. Empirical studies on selfdisclosure in any context should be aware of such multidimensional structure of the concept and clarify in which dimension the studies are interested.

Self-disclosure is a medium of social exchange, which involves balancing benefits and costs (Foddy, 1984). Various functions that self-disclosures have, such as self expression (catharsis), self-clarification, social validation, relationship development and social control (Derelga & Grzelak, 1979), are rewards that self-disclosers expect. There are also risks that people take into account when considering self-disclosure. Baxter and Montgomery (1996) identified four risks of disclosing: rejection by the listener, reduction of one's autonomy and personal integrity, loss of control or self-efficacy, and the possibility of hurting or embarrassing the listener. Kelly and McKillop (1996) added a distorted impression on the part of the listener. The present study defines self-disclosure as an exchange relationship. People weigh what they will gain or lose as a result of disclosing. It always involves an audience, whether individual or group. Such revelations could be made verbally or non-verbally.

#### Online Public Disclosure

Several points can be clarified in defining online public disclosure from the above discussion. First, the depth dimension is more vulnerable to interpersonal risks listed above than is the breadth dimension (Omarzu, 2000). If people think that disclosing the core self entails more risks than rewards, they choose to talk about superficial information at length (breadth and duration). The depth dimension, at the same time, is likely to bring on more rewards than other dimensions, by the receiver's incurring an obligation to reciprocate (Rubin, 1975). In the present study, the depth dimension is of interest.

Privacy erosion is one of the major concerns in Internet environments. In order to use online services such as e-commerce sites and discussion boards, prospective members are required to disclose to the owner of the site personal information such as real name, age, postal address, email address, and phone numbers, by filling in registration forms. People often provide invalid information when asked on web sites due to privacy concerns (Fox, 2000). This is related to the desire to keep personal information out of the hands of others. DeCew (1997) calls it the informational dimension of privacy.

Another major risk, more relevant to the context of online social support communities and the depth dimension of self-disclosure, is the possibility that the discloser's self-image is distorted on the part of the disclosure receiver. Prospective members surrender some of their informational privacy to community owners in order to access a cyberspace where they can freely express their self-identity without interference from others. It is the expressive dimension of privacy, according to DeCew (1997). Online community members are freed from evaluation concerns usually experienced offline when they try to express some parts of their self – the inner or core self (Bargh,

McKenna, & Fitzsimons, 2002). Expressive privacy is higher online than off-line (Ben-Ze'ev, 2003). Parodoxically, online community members gradually lose their expressive privacy as they build interpersonal relationships and the community becomes an important part of their identity. As close relationships develop in an online community, members become more concerned about other members' opinions as well as expect more supportive responses. The public nature of message exchange in online communities magnifies such concerns. That is, a few members' negative replies can be viewed as the majority opinion of the community because all members have access to publicly posted messages.

In summary, online community members disclose some information about the self, especially about the core self, expecting social support from other members in return. They go through processes of balancing the rewards and risks associated with the disclosing – (informational) privacy erosion and having self-images distorted.

Second, the functional approach suggests that different situations entail different motivations. The "trait versus situation" debate is yet to be settled in self-disclosure research. Personality traits such as competence and sociability have been found positively related to self-disclosure (DeVito, 2000). Studies on gender differences in self-disclosure support the trait position. Different personality traits in male versus female, whether biologically determined or socially learned, lead to different patterns of self-disclosure (Hatch & Leighton, 1986; Petronio, Martin, & Littlefield, 1984; Winstead, Derlega, & Wong, 1984). Researchers should be clear about which position they hold. The focus of the present study is on situational differences in self-disclosure. The main situational factor in this study is how much anonymity individuals perceive in CMC. The same individual may perceive different levels of anonymity according to online communities in which the individual is participating, or topics that he or she is covering.

Third, self-disclosure requires at least one individual other than the self. It needs an audience. Most self-disclosure research assumes, but is not limited to, interpersonal contexts. In the current study, the audience of self-disclosure is the discloser's online social support community as a whole. Rheingold (1993) in his definition of online community claimed that online community members carry on "public" discussions.<sup>2</sup> Because an online community develops through public <sup>3</sup> exchanges of messages, the primary model of interaction is marked by its relation to the community as a whole (Burnett, 2000). People develop interpersonal relationships through public interactions (Parks & Floyd, 1996; Radin, 2001; Utz, 2000; Zhang & Hiltz, 2003). Public exchanges of messages on bulletin boards are often directed to specific members. Members understand that their seemingly private exchanges are to be shared by other members as well as targeted ones. Communication in online communities is a mixture of interpersonal and (large) group communication. As Rheingold said (1993), participants form webs of "(inter)personal" relationships through "public" discussions.

Online public disclosure is defined as the willingness to share the core self with other members. Although the disclosing member seeks social support as a reward, the member is also aware of risks associated with the disclosure. They are concerned about

<sup>2</sup> Rheingold (1993) defined virtual communities as "social aggregations that emerge from the Net when enough people carry on those public discussions long enough, with sufficient human feeling, to form webs of personal relationships in cyberspace" (p.5).

<sup>3 &</sup>quot;Private" and "personal" is often confused as an antonym of "public." In fact, the two words are used interchangeably. Precisely, private is that which "is intended only for a certain person" (DeCew, 1997, 56-58p), and personal means "pertaining to a particular person's own affairs" (Ben-Ze'ev, 2003, 452p). Not everything that is personal is also private. Messages exchanged in an online community originate from individual members (personal), but are shared with the whole community (public). Members may exchange emails (or other alternative mechanisms for directing private messages to specific members such as a memo function) once they build interpersonal relationships through public exchanges of messages. This interaction is personal and "private" communication as opposed to "public" communication, and beyond the boundaries of the community itself.

negative impressions that the disclosure would make on other members. The definition includes only the depth dimension of self-disclosure. This refers not to a willingness to make disclosures to specific members through private interactions like personal emails or memo functions, but rather to the willingness to reveal such content to the whole community as an audience by publicly posting messages. The discloser knows that his or her message is to be posted on the community's bulletin board where all members have access.

#### Perceived Anonymity Affecting Online Public Disclosure

# **Deindividuation Model**

The first model explaining a relationship between perceived anonymity and online public disclosure, the deindividuation model, is based on findings in previous studies on self-disclosure in CMC, web-based surveys, and GDSS studies. The model proposes that a third variable, *evaluation concern* (defined as being worried about others' opinion on what the self does or says), mediates the effect of perceived anonymity on self-disclosure, using the public self-awareness explanation of online self-disclosure.

A heightened tendency to self-disclosure online has been regarded as a manifestation of "disinhibition." Researchers examined different types of self-concepts to explain how anonymity in CMC affects self-disclosure. McKenna and her colleagues (Bargh, McKenna, & Fitzsimons, 2002; McKenna, Green, & Gleason, 2002) differentiated the "true" from the "real" self. Anonymity as a safety net enables the "true" inner self to be expressed easily, which would be hidden under the "real" self in face-toface contexts.

"Private" versus "public" self-awareness also has been examined in relation to self-disclosure in CMC (Matheson & Zanna, 1988; Joinson, 2001). The private selfawareness explanation concerns self-information readiness by self-focus. The tendency to disclose oneself increases when private self-awareness is heightened by making selfrelevant information more readily available (Franzoi & Davis, 1985). CMC users' overestimation of their own contributions to online discussion groups demonstrates this heightened private self-awareness in online interaction (Weisband & Atwater, 1999). Being alone in front of one's own computer screen in one's own room or in a separate computer laboratory cubicle where none but the self is visible, produces an anonymous, especially other-anonymous, setting (Wallace, 1999). This sense of anonymity prompts self-focus, which is conducive to self-disclosure.

The public self-awareness explanation concerns self-presentational motivation (Joinson, 2001). If people experience reduced public self-awareness, it lowers selfpresentational concerns. Anonymity of others to the self in CMC decreases public selfawareness and, subsequently, concerns about others' evaluation about what the self says. As a result, people tend to reveal more about themselves.

The self-awareness explanations parallel an early theoretical viewpoint of CMC, the Cue-Filtered-Out (CFO) approach. The CFO approach explained online hostilities such as flaming, using the concept of "deindividuation" due to reduced social cues (Kiesler, Siegal, & McGuire, 1984) or reduced social presence (Short, Williams, & Christie, 1976). Before being reformulated as Social Identification of Deindividuation (SIDE) theory, deindividuation referred to a reduction in self-focus. Zimbardo (1969)

argued that factors such as anonymity, arousal, and sensory overload, usually experienced in crowds, lead to deindividuation. Prentice-Dunn and Rogers (1982) suggested that deindividuation is caused by two factors - a reduction in accountability cues (via lowered public self-awareness) and a reduction in self-awareness - which lead to decreased selfregulation and use of internal standards.

In similar vein, web-based surveys, as compared to paper-based ones, were found as having reduced socially desirable responses (Frick, Bächtiger, & Reips, 2001; Joinson, 1999), and increased levels of self-disclosure (Weisband & Kiesler, 1996) and the willingness to answer sensitive questions (Tourangeau, 2003). In applied areas, CMCbased interviewees tended to admit more health-related problems (Epstein, Barker, & Kroutil, 2001), more HIV risk behaviors (Des Jarlais, Paone, Milliken, Turner et al., 1999), and more drug use (Lessler, Caspar, Penne, & Barker, 2000). Anonymity in group decision support systems leads to increases in idea generation because people ideas are not withheld because of fear of negative reactions from other participants (Cooper, Gallupe, Pollard, & Cadsby, 1998; Dennis & Valacich, 1999).

Such findings also can be explained by reduced public self-awareness which frees individuals from concerns about others' opinions in CMC. The deindividuation model of perceived anonymity affecting online public disclosure derives from the same reasoning. Anonymity perceptions experienced in an online social support community increase online public disclosure, mediated by evaluation concern (see Figure 2-1).

H1a: Perceived anonymity increases online public disclosure.
H2a: Perceived anonymity decreases evaluation concern.
H3a: Evaluation concern decreases online public disclosure.



Figure 2-1. Deindividuation Model of Perceived Anonymity Affecting Online Public Disclosure

### SIP-Based Model

A competing model can be specified with the same variables differently from the deindividuation model, based on the Social Information Processing (SIP) model. The SIP-based model predicts that perceived anonymity decreases online public disclosure. After revisiting the SIP model, a set of hypotheses are presented corresponding to each hypothesis in the deindividuation model.

## The Social Information Processing (SIP) Model Revisited

The SIP model argues that differences in impression formation and relational development between FtF communication and CMC lie in different rates of social information exchange. Relational development takes more time in CMC than in FtF, but eventually the same, sometimes higher, level of development is possible (Walther, 1996). Three assumptions of the model made such prediction possible. First, people have the affiliation motive. This basic human motivator leads people to relate to seek social acceptance from each other ("relational motivators"). Second, in CMC, such motivations are realized through verbalized exchanges of social information. The verbalization makes social information processing take longer than face-to-face. CMC users adapt to the lack of social context cues and learn how to encode and decode such information in texts. Third, CMC users develop an interpersonal epistemology, which refers to a distinctive representation of the communication partner. It is individuating knowledge gained through ongoing interaction over time (Walther, 1992). Communicators in CMC, like those in FtF interactions, are driven to develop social relationships. Previously unfamiliar users become acquainted with others by forming impressions of others through textually conveyed information. They gradually refine interpersonal knowledge by exchanging information about each other. As such knowledge develops, they exchange more personal messages.

Walther (1996) later developed the hyperpersonal perspective of CMC, an extended version of the SIP model. Walther proposed the perspective after additional analysis of the same longitudinal data that evidenced the SIP model. CMC groups were rated significantly more positive than their FtF counterparts on several relational outcomes. The reduced social cues in CMC lead to optimized self-presentation and idealized perception. The sender controls what information about the self is to be communicated. The sender becomes more careful and selective in presenting himself. Minimal, but refined, information about the sender goes through an "overattribution" process on the part of the receiver. The receiver builds stereotypical impressions of the sender based on exaggerated information from the sender. As a result, more positive relationships develop.

According to the SIP model, verbalized social information individuates CMC users, proximating relational outcomes in CMC up to the FtF level (Tidwell & Walther, 2002; Ramirez, Walther, Burgoon, & Sunnafrank, 2002). The model was introduced as a response to the Cue-Filtered-Out (CFO) approach that renders CMC impersonal. According to SIDE theory, the lack of nonverbal cues in CMC emphasizes group salience, and encourages individuals to perceive each other more similarly, and to form more favorable impressions toward each other.

Although not explicitly stated in each theory, it can be inferred how much individuating information each theory assumes is beneficial to relationship development. The CFO approach and SIP propose that social cues and information are necessary for the development of positive relationship. Therefore, more information is better. On the contrary, SIDE favors minimal information. Social information maximizes individual differences, and reduces interpersonal attraction based on common group membership. The hyperpersonal perspective suggests that increased "overrated" information contributes to positive developments of relationships. Recalling that anonymity is defined as a perceived lack of identity information, perceived anonymity is favored in SIDE, but not in CFO and SIP. The hyperpersonal perspective focuses on the "valence" of identity information rather than its amount. That is, positively-loaded information contributes to relationship development. Table 2-1 presents how the major CMC theories differ in impression formation and relational communication.

Theory	CFO	SIDE	SIP	Hyperpersonal
"CMC is"	Impersonal	Impersonal or Hypersonal	Interpersonal	Hyperpersonal
Bandwidth restrictions	Inherent in CMC, cannot be overcome	Anonymity rather than bandwidth restriction is of interest	Can be overcome through verbalization of nonverbal cues	Can be overcome through verbalization of nonverbal cues
Relational closeness	By individuating information	By social categorization	By individuating information	By exaggerated self and other images
Implication for relational development	More information is better	Minimal information is better	More information is better	Valence is more important than amount.

Table 2-1. Relational Development in CFO, SIDE, SIP, and Hyperpersonal Perspective

Note. CFO, Cue-Filtered-Out approach; SIDE, Social Identity of Deindividuation theory; SIP, Social Information Processing Model

Walther employed longitudinal experiments in order to demonstrate that CMC reaches the same level of relational developments as FtF interactions, when sufficient time is allowed. The original focus was on changes within CMC, and the comparison with FtF interactions were presented as providing baseline levels of relational development (Walther & Burgoon, 1992). However, later studies by Walther and his colleagues, especially after he found the hyperpersonal effects of CMC (1996), and other studies that employed the SIP model, tended to move research foci from within-CMC changes to between-CMC-and-FtF differences (e.g. Tidwell & Walther, 2002; Walther, Slovacek & Tidwell, 2001; Weisgerber, 2000). Researchers, implicitly or explicitly, aimed at evidencing that CMC relationships are more positive than FtF ones, and tried to find contingencies on which CMC effects diverge (e.g. anticipated future interaction, Walther, 1994). A theoretical implication is that channel effects of the medium (CMC *versus* FtF), which the SIP model originally criticized in opposing the Cue-Filtered-Out approach, regained its central position, although the direction of the effects was reversed. The present study, therefore, proposes returning research attention from comparative effects of

CMC to temporal changes inside CMC. Such perspective change also is consistent with the conceptualization of anonymity as a perceptual continuous variable, as opposed to a dichotomous technical variable.

#### SIP-Based Model, Respecification of Deindividuation Model

Previous studies that compared CMC and FtF maintained that anonymity, narrowly defined as visual anonymity, positively affected (the amount of) self-disclosure (Joinson, 2001). Visual anonymity, via reduced public self-awareness, decreases evaluation concern. Reduced evaluation concern leads to increasing self-disclosure. We call it the deindividuation model because its explanation parallels the traditional deindividuation theory (Zimbardo, 1969; Prentice-Dunn & Rogers, 1982). Perceived anonymity, based on the SIP model, does not equal visual anonymity. It also is determined by other kinds of identity information available to communicators. This section presents how the SIP model predicts the effect of perceived anonymity on online public disclosure differently from the deindividuation model.

As shown above, SIP focuses on relational development in CMC. Cornerstone theories on which Walther relied for developing SIP were Berger and his colleagues' Uncertainty Reduction Theory (URT) (Berger & Calabrese, 1975; Berger, Gardner, Parks, Schulman, & Miller, 1976; Berger, 1979; Berger & Bradac, 1982; Berger, 1987), and Altman and Taylor's Social Penetration Theory (SPT) (1973). URT predicts that people will be motivated to share personal information the first time they meet in order to reduce uncertainty (or increase predictability) about the behaviors of both themselves and others. According to SPT, relationships develop toward greater intimacy and affiliativeness as

people exchange more information about themselves at deeper levels on a broader range of topics (Altman & Taylor, 1973). The first assumption of SIP mentioned above people have the affiliation motive which increases communication with others – was drawn from SPT, and the third assumption - CMC users develop interpersonal knowledge about each other through communication - from URT. The two theories concur with the idea of Thibaut and Kelly's Social Exchange Theory (1952) that people tend to regulate relational closeness on the basis of rewards and costs (Berger, 1987; Littlejohn, 1992). That is, people base the likelihood of developing a relationship with someone on the perceived possible outcomes (rewards minus costs). Peoples' affiliation motive prompts them to seek intimacy in relationships. When people can anticipate desired relational outcomes, they are willing to invest their resources to develop relationships. Applying this perspective to the present study, social support from other online community members is the anticipated reward in relational development. They are willing to share their negative aspects of life because of expected social support from other members. But when anonymity perceptions are high, a member feels like being in a community whose members are indifferent and unresponsive to what his or her problems are because they also do not know who is disclosing. Thus, the member will not bother to invest his or her time and efforts by posting personal problems. It is not a fair exchange. When people perceive Internet environments as warm, active, and sociable enough to provide anticipated social rewards, their self-disclosing becomes more intimate, revealing negative aspects of the self (Ma, 2003). Therefore, perceived anonymity tends to decrease online public disclosure.

H1b: Perceived anonymity decreases online public disclosure.

Online social support communities are characterized by highly caring messages exchanged among members. They expect to be understood by other members who are in similar situations. Therefore, they often reveal what they would not off-line. Sometimes, they want to vent unfiltered personal opinions or emotions (for example, 'why I came to have an extra marital relationship with a married man'). When disclosing such stories, members will expect critical as well as sympathetic responses. Perceived anonymity alleviates evaluation concern as in the deindividuation model. The path from evaluation concern to online public disclosure in the deindividuation model is reversed in the SIPbased model with online public disclosure positively affecting evaluation concern. This reverse path implies that the public self-awareness explanation of the deindividuation model does not hold true in the SIP-based model. Evaluation concern is not so important in predicting online public disclosure in the SIP-based model, which underscores the role of anticipated social support from others as a reward for self-disclosing in depth (see Figure 2-2).

H2b: Perceived anonymity decreases evaluation concern.H3b: Online public disclosure increases evaluation concern.

The major difference between the deindividuation model and the SIP-based model lies in different communication situations. In the deindividuation model, no future interaction is anticipated, as among strangers who will never meet again, and the primary function of self-disclosure would be catharsis – releasing or venting negative emotions and being freed from psychological discomfort. Disclosers do not expect their relationships with the listeners to grow through reciprocal disclosures.

Figure 2-2. SIP-based Model of Perceived Anonymity Affecting Online Public Disclosure



In the SIP-based model, contrarily, people expect that their relationships continue to grow. They use self-disclosure as a strategy to obtain information about others (Tidwell & Walther, 2002). They weigh costs and rewards of self-disclosure in relationship developments. Applying it to the context of online social support communities, members participate in expectation of satisfying their need for social support. Members with high social support need may perceive higher utilities of selfdisclosure as a means to induce desired responses. In fact, revealing intimate personal facts is a popular strategy to receive emotional support from other members (Campbell, 2002; Preece, 1999). Dissatisfaction with their off-line social contacts causes them to seek alternative online sources (Walther & Boyd, 2002). Perceived rewards of selfdisclosing would be higher than perceived risks for them. Higher need for social support increases online public disclosure by increasing the predicted outcome value of interactions (Sunnafrank, 1986). *Need for social support* is defined as subjective perception of the extent to which there are few people in one's social circle who are available when one is in need of social support.

H4: Need for social support increases online public disclosure.

It can be inferred that increased need for social support will lead online community members to perceive more similarities with other members who participate in the same community. According to URT, similarities reduce uncertainty (Berger & Bradac, 1982). In reducing uncertainty, people create impressions about the self and others. The less identity information they perceive exchanged about each other, the more uncertain they are about the communication situation.

H5: Need for social support decreases perceived anonymity.

In the SIP model which originally dealt with interpersonal relationships in small groups, community size was not included as affecting CMC users' communication pattern. Community size, however, has been found to affect the dynamics of community interaction, conversational strategy, information overload, social loafing, and member sustainability (Butler, 2001; Markus, 1987; Morris & Ogan, 1996; Whittaker, Terveen, Hill, & Cherny, 1998). In the context of online communities, which involve large group communication, members have fewer opportunities to participate and less time to interact (Butler, 2001). Humans' limited information processing capacity and scarce time availability cannot sustain remembering and interacting with all members. *Perceived community size*, therefore, is added to the SIP-based model as a controlling variable. Perceived community size is defined as the perceived number of members who visit an online community.

Variances in perceived community size are not always expected to be small within the same community. Many online communities using bulletin board systems operate via multiple discussion threads, which help members more easily to find and engage in topics of their interests. Therefore, even within the same community, the perceived number of members would differ according to which discussion threads the member frequently participates in. Figure 2-3 presents a refined SIP-based model with need for social support as an important predictor for perceived anonymity and online public disclosure and perceived community size as a controlling variable.

Finally, a research question is advanced from SIDE theory. As mentioned earlier, SIDE theory places more emphases on group salience than on anonymity. The effects of anonymity in CMC are conditional on which identity salience is prevalent, personal or group. Those who share a common identity or fate (common identity group, for example, same ethnicity or suffering the same illness) show more normative behaviors than those who casually gather based on attraction to each other (common bond group, for example, friends or other social gathering) (Postmes & Spears, 2000; Prentice, Miller, & Lightdate, 1994; Sassenberg, 2000, 2002). Online communities are characterized by common interests. Especially, members of OSSCs gather because of the common fate they face. Group salience tends be higher than casual dating communities or hobby communities. Relationships in the above model may differ according to members' identification with the community.

RQ1: How will members' identification with the community affect the relationship between perceived anonymity and online public disclosure?





# CHAPTER 3

# METHODS

### **Research Site**

The present study employed two data collection methods, a qualitative pretest for initial item generation, and an online survey for scale validation and nomological network test. Subjects for the qualitative pretest and the online survey were recruited in an online social support community, *MissyUSA* (www.missyusa.com).

*MissyUSA* is an online community for married Korean women who currently live in the United States, or will marry and live in the United States within six months. They are wives of students, students themselves, career women, married to Americans or not. The community started in November 2000 at a commercial community portal site and now has its own independent site. It is an asynchronous, text-based community using computer-based bulletin board systems. The community serves more than 57,000 members, and 50 to 60 new members join each day, as of July 2005. *MissyUSA* has seven major sections: Talk Lounge, Healthy Beauty, Home & Food, Motherhood, US Info, Town Zone, and Missy School. As shown in the section titles, members exchange informational and emotional social supports. Members of *MissyUSA* share several demographics – Korean, married, female, and resident in the United States. They moved to a foreign country where everyday activities cause them all kinds of unexpected problems ranging from relationships with in-laws, homesickness, marital problems, disputes with phone or insurance companies, how to cook traditional Korean food, and

parenting and childbirth. Advice and social approval from those who already went through similar difficulties are extremely helpful and alleviate emotional distress.

The nature of discourse in *MissyUSA* is primarily social support. Members often confess their shameful experiences, hurt feelings, upset emotions, and wrongdoings as well as share heartwarming stories and joyful news in their lives, and exchange useful information, gossip about celebrities and humor. Those who reveal negative aspects of their lives seek emotional catharsis and social validation from those who may understand them better. Responses to such postings are usually positive – warm, emphatic, supportive, encouraging, and caring. Other members reply how much they can understand the confessor, or that they also had the same experience. Responses are constructive as well. Replies which begin with emphatic tones sometimes include fair judgments on what the confessor did wrong, and sincere advice about how to improve the situation. If confessional postings contain controversial topics such as extramarital relationships and religions, message tones become critical.<sup>4</sup>

By recruiting subjects from one community, the researcher can prevent the study from being confounded with other community-related variables such as types of communities. For example, online dating communities and fan club communities may differ in terms of the nature of relationships that people expect to develop. In addition, the fact that members are all women is also beneficial to the present study. One of the important predictors for self disclosure is gender. Since all subjects are women, there would be no concern for a confounding effect by gender.

<sup>&</sup>lt;sup>4</sup> This description is based on the researcher's observation as a member. The owner of *MissyUSA* did not allow analysis or citation of actual postings.

# Initial Item Generation and Refinement

The validity of a scale should start with initial item construction (Nunnally & Bernstein, 1994). Nunnally and Bernstein's "domain sampling" suggests that researchers start with concept explication, specify domains that constitute the concept, and carefully select potential items for each domain (dimension). Ideally, after domain sampling, researchers select items reflecting each domain from previous studies, drop conceptually overlapped items, or create new items representing domains missing in previous literature, and reword items to be relevant to a study context (Bhattacherjee, 2002). However, no prior scale for perceived anonymity exists. Therefore, the present study created items for each perceived anonymity dimension based on the five categories of identity information classified earlier (name or pseudonym, locatability, biographic information, communication pattern and style, audio-visual information).

To ensure the content validity of items, a qualitative pretest was performed with eight<sup>5</sup> *MissyUSA* members between May 12 and 28, 2005 who were recruited off-line in Greater Lansing, Michigan. They had been membesr of *MissyUSA* for a minimum of one year and visited it at least twice a week. Given index cards of perceived anonymity items along with items for other concepts in this study (online public disclosure, evaluation concern, need for social support, group identification), the pretest subjects were asked to sort them according to concepts and definitions, and to evaluate how well each item represents the relevant concept on a seven-point Likert scale (Appendices A and B). The

<sup>&</sup>lt;sup>5</sup> Usually, five to eight is said to be enough for homogenous qualitative samples.

sorting was conducted in places of subjects' choice to ensure subjects' convenience and psychological comfort (for example, the subject's residence).

Candidate items for online public disclosure, need for social support and group identification were modified from existing scales: online public disclosure from Wheeless' Revised Self-Disclosure Scale (RSDS) (Rubin, Palmgreen, & Sypher, 1994), need for social support from the Interpersonal Support Evaluation List (ISEL) (Cohen, et al., 1985), and group identification from Arrow-Carini Group Identification Scale (Henry, Arrow, & Carini, 1999) and Luhtanen and Crocker's Collective Self-Esteem Scale (1992). The control of depth and the positive-negative dimensions of RSDS were used to create items for online public disclosure. Among the 16 items of the short version of ISEL, items that emphasize emotional social support were included. The ISEL scale stresses tangible forms of support which is the least relevant to online social support (e.g. borrowing a car, quick emergency loan, or help in moving). Additional items that are specific to *MissyUSA* (e.g. I wish I had someone who listens to me when I struggle with my life in the U.S.) were included. Candidate items for evaluation concern were newly created to make them more appropriate for the context of *MissyUSA*. Candidate items are listed in Table 3-1.

All subjects sorted item cards correctly. Based on subjects' rating and feedback, items were rephrased or dropped for clarity. If more than half the subjects rated an item the lowest, it was dropped after comments from the subjects were reviewed. Table 3-1 lists the final sets of items to be included for scale validation and nomological network test.

Concept	t # of	# of	Item	Final items
Concept	# 01	final	No	(evoluded through pretect)
	items	items	INU.	(excluded infough prefest)
Salf				Some members can record an uname (D)
Sell-	17	13	sal	Some members can recognize my name. (R)
Anonymity		-	saz	Some members can recognize my username.
			sas	Some members may find out my email address
				or nomepage address. (R)
				(# Some members may lind out my mail
				address or telephone number.)
			sa4	(R)
			sa5	Some members can guess how old I am. (R)
			sa6	Some members can tell my marital status. (R)
			sa7	Some members can tell my profession. (R)
			sa8	Some members can tell how much education I
		1		have had. (R)
			sa9	Some members can tell our household income
				(# Some members can tell how many shildren
				(# Some members can ten now many children
			co.10	Some members can tell my hebbios or
			Salu	interests ( <b>P</b> )
	1		ca11	Some members can recognize me from my
			Sall	writing style (R)
			\$212	Some members can recognize me from
			5412	expressions or words Luse frequently (R)
				(# Some members can recognize me from the
				way I approach the tonic covered )
				(# Some members may imagine my
	1			appearance)
			\$213	Some members may match me with nictures I
			Suis	posted. (R)
Other-	17	13	oal	I can recognize the names of some members.
Anonymity	1			(R)
			oa2	I can recognize usernames of some members.
				(R)
			oa3	I may find out email addresses or homepage
				addresses of some members. (R)
				(# I may find out mail addresses or telephone
				numbers of some members.)
			oa4	I can recognize some members via their IP
	1			addresses. (K)
			003	sometimes, I can guess how old other members are. (R)
			026	Sometimes I can tell the marital status of
				other members (R)
			027	Sometimes. I can tell the profession of other
				members (R)
	L	1	1	

Table 3-1. Candidate and Final Items by Concept

Table 3-1. (continued)

Concept	# of	# of	Item	Final items	
	candidate	final	No.	(excluded through pretest)	
	items	items			
Other-	17	13	oa8	Sometimes, I can tell how much education	
Anonymity				other members have had. (R)	
			oa9	Sometimes, I can tell the household income	
				level of other members. (R)	
				(# Sometimes, I can tell how many children	
	]			other members have and how old they are.)	
			oa10	Sometimes, I can tell hobbies or interest of	
				other members. (R)	
			oall	writing styles. (R)	
			oa12	I can recognize some members from	
				expressions or words they use frequently. (R)	
				(# I can recognize some members from the	
				way they approach the topic covered.)	
				(# Sometimes, I can imagine their	
				appearance.)	
			oa13	Sometimes, I can match other members with	
				pictures they posted. (R)	
Online Public	8	8	opdl	I am willing to reveal negative things about	
Disclosure			an 42	myself.	
			opaz	facting to express my most intimate	
			ond3	I am willing to share what I did wrong	
			opd3	I am willing to share what I would not do with	
		my family, my off-line frie		my family, my off-line friends and colleagues	
				at work.	
			opd5	I am willing to talk about my shameful	
			-	experiences.	
			opd6	I am willing to talk about my hurt feelings.	
			opd7	I am willing to talk about my failures.	
			opd8	I am willing to share my family history or	
			L	secrets.	
Evaluation	9	5	ecl	Other members will criticize what I posted.	
Concern			ec2	Other members will disking what I posted	
				Other members will disagree with me	
			604	(# Other members will laugh at me.)	
- -				(# Other members will disapprove of what I	
				posted)	
			ec5	Other members will oppose what I posted.	
				(# I will be rejected for what I posted.)	
				(# I will be ridiculed for what I posted.)	
Group	11	7		(# I feel I do not have much to offer this online	
Identification				community.)	
			gil	I feel I am one of the least contributing	
				members in this online community. (R)	
	1			(# I regret I joined this online community.)	

Concept	# of	# of	Item	Final items
	candidate	final	No.	(excluded through pretest)
	items	items		
Group Identification	11	7	gi2 gi3	<ul> <li>(# I do not tell anyone that I am a member of this online community.)</li> <li>I feel that this online community is worthwhile.</li> <li>(# I am ashamed to be a member of this online community.)</li> <li>My membership in this online community has little to do with how I feel about myself. (R)</li> </ul>
			gi4	I think of this online community as part of who I am.
			gi5	I see myself as different from other members of this online community. (R)
			gi6	I often cite this online community when I talk to others off-line.
			gi7	I enjoy interacting with the members of this online community.
Need for Social	12	9	nss l	I wish I had someone who listens to me when I struggle with my life in the U.S.
Support			nss2	I wish I had someone who listens to me when I have a marital problem.
			nss3	I wish I had someone who listens to my
				complaints about in-laws.
	1			(# I wish I had someone who can provide
				with my friends or colleagues )
			nss4	I wish I had someone whom I can ask for
				advice when things go wrong.
			nss5	I wish I had someone with whom I can talk
			nss6	I wish I had I someone who helps me decide
			nss7	I wish I had someone whose advice I really
			nss8	I wish I had someone who can provide
				objective feedback about how I am handling my problems.
				(# I wish people had confidence in me.)
			nss9	I wish I had someone with whom I can share
				my most private worries and fears.
				(# I  wisn  I  were as close to my friends as are many other people )
	L	L	L	

Table 3-1. (continued)

Note. (R) indicates "reverse-coded in the analysis."

#### Scale Validation and Nomological Network Test

#### Measures

Subjects were asked to answer how much they agree to each item in the final set of measures for self-anonymity (SA), other-anonymity (OA), online public disclosure (OPD), evaluation concern (EC), group identification (GI) and need for social support (NSS) (Table 3-1). The items were anchored with 7-point Likert type scales from strongly disagree, 1 to strongly agree, 7. Items for OPD, EC, GI, and NSS were analyzed for alpha reliabilities (OPD, alpha = .957; EC, alpha = .955; NSS, alpha = .971). Only three of seven GI items remained (alpha = .687).<sup>6</sup> Only these items were included in further analyses.

Perceived community size was measured by asking how many people they think visit *MissyUSA* per day. Subjects were asked to choose from a set of response choices that increased by 1,000 people incrementally. This controlling variable was included as an observed variable. All measurements were translated into Korean, and the questionnaire was revised based on comments from three doctoral students who are bilingual.

<sup>&</sup>lt;sup>6</sup> Cronbach alpha values greater than .6 are considered adequate for exploratory work (Nunnally, 1994).

# Data Collection

A total of 301 *MissyUSA* members participated in the survey between June 22 and July 3, 2005. Subjects were recruited through a banner advertisement put on the main page of *MissyUSA*.<sup>7</sup> Subjects who clicked the banner were led to a consent form page of an online survey site (www.cmcresearch.net/survey\_t.html) (Appendix C).

The recruitment banner advertisement consisted of four main pages. The first two contained information about the title of the study (abbreviated from the original title with simple words in order to help subjects understand and to fit the limited space of the banner), the purpose of the study, the eligibility criterion for participation,<sup>8</sup> and the name and contact information (email address) of the researcher. The third page informed potential subjects of compensation for participation. The last page included a link for detailed information about the survey (Appendix D).<sup>9</sup>

The online survey consisted of four sections: (1) subjects' general experiences in MissyUSA; (2) how subjects feel about themselves when participating in MissyUSA; (3) how subjects feel about themselves in their daily lives; and (4) demographic information (Appendix E).<sup>10</sup> A "confirmation" page was added at the end of the survey (Appendix F). In this page, subjects were provided the numbers of questions to which they did not

<sup>&</sup>lt;sup>7</sup> The owner of *MissyUSA* requested not to use message boards to recruit subjects. Posting messages of subject recruitment was considered obtrusive and irrelevant in topical message boards.

<sup>&</sup>lt;sup>8</sup> The owner of *MissyUSA* requested not to use the name of the community in the banner (as well as in the online survey itself) because the use of the community name would be dispiriting. Therefore, the eligibility information was given as "members of an online community."

<sup>&</sup>lt;sup>9</sup> The banner was approved by the owner of the *MissyUSA* in advance.

<sup>&</sup>lt;sup>10</sup> The survey items and wording was approved also by the owner of *MissyUSA* in advance.

answer, and an opportunity to go back to unanswered items and respond to them, or change their answers if they so chose.

Subjects were compensated with an Amazon.com email gift certificates of US\$5 each if they completed the survey.<sup>11</sup> Participants who voluntarily provided email addresses in the survey received gift certificates by email a week after the survey completion.

The mean age of subjects was 31.73 years (SD=3.56), and they had stayed in the United States for 59.26 months on average (SD=44.16). The average membership was 26.39 months (SD=14.51). Most of the subjects had college or higher degrees (97.3%), and had annual income less than US\$60,000 (62.5%) (Table 3-2).

Age (years)	Mean = 31.73	Range = 30 (18, 48)
	Median = 32	
	Mode = 32	
	SD = 3.56	
US stay (months)	Mean = 59.26	Range = 233 (0, 233)
	Median = 48	
	Mode = 48	
	SD = 44.16	
MissyUSA membership	Mean = 26.39	Range = $83(1, 84)$
(months)	Median = 24	
	Mode = 24	
	SD = 14.51	
Education	High School graduates	7, 2.3
(members, %)	College degree	184, 61.1
	Master's or Doctoral degree	109, 36.2
	None of the above	1, 0.3
Annual Income	Less than US\$30,000	86, 28.6
(members, %)	US\$30,000 to 59,999	102, 33.9
	US\$60,000 to 99,999	72, 23.9
	More than US\$100,000	41, 13.6

Table 3-2. Characteristics of Subjects

<sup>&</sup>lt;sup>11</sup> US\$5 is the minimum dollar amount for an email gift certificate available at Amazon.com.
# Data Analysis

Data analysis for scale validation and nomological network test was conducted with structural equation modeling (SEM) using Amos 4. First, an exploratory factor analysis (EFA) was performed on perceived anonymity (PA) items (that is, selfanonymity and other-anonymity items) as a preliminary step before a confirmatory factor analysis (CFA) using SPSS 11.5. Second, a second-order CFA was performed on the remaining PA items. Convergent and discriminant validities were evaluated. Third, two competing models – deindividuation and SIP-based models, were tested. Fourth, a multiple group analysis was performed on the refined SIP-based model. A composite score was used to categorize low and high group identification groups in order to investigate group differences in path coefficients.

Mean substitution was used to replace missing data since the number of missing data was less than five percent for all variables. Outliers were replaced with a value of 3 SD from each mean. The correlations, means, and standard deviations of scales are presented in Table 3-3, and those of all observed variables in Appendix G.

	SA	OA	DA	OPD	EC	NSS	GI
SA							
OA	.392**						
DA	.561**	.487**					
OPD	162**	132*	204**				
EC	295**	138*	284**	.156*			
NSS	127*	159**	103	.259**	009		
GI	158**	191**	164**	.325**	019	.328**	
Mean	35.500	24.093	18.017	31.913	13.702	47.705	14.846
Median	36.000	24.000	18.000	33.000	13.000	49.000	15.000
Mode	38.000	20.000 <sup>a</sup>	18.000	40.000	10.000	63.000	16.000
SD	10.238	7.875	5.850	12.090	6.010	12.111	3.782
Range	48	36	24	48	30	54	18
(min, max)	(8, 56)	(6, 42)	(4, 28)	(8, 56)	(5, 35)	(9, 63)	(2, 21)
Alpha reliability	.888	.906	.885	.957	.955	.971	.687

Table 3-3. Correlations, Means, and Standard Deviations for Scales

Note. a. Multiple modes exist. The smallest value is shown. All statistics for composite scores.

> SA, Self-Anonymity; OA, Other-Anonymity; DA, Discursive Anonymity; OPD, Online Public Disclosure; EC, Evaluation Concern; NSS, Need for Social Support; GI, Group Identification

# CHAPTER 4

### RESULTS

# Exploratory Factor Analysis on Perceived Anonymity

A total of 13 self-anonymity (SA) and 13 other-anonymity (OA) items that were generated through a qualitative pretest were entered into an exploratory factor analysis (EFA) using an Oblimin rotation method (assuming an interrelationship between factors). The principal component analysis identified five factors having eigen values larger than 1.0. Table 4-1 presents the factor loadings of the five factors, which accounted for 66.3% of the variance. To facilitate factor interpretation, only those factor loadings with values greater than 0.4 were reported. Items sa6, sa10, sa13, and oa13 had low loadings from .371 to .473, and oa3 was cross-loaded on Factors 4 and 5. Excluding these five items, another EFA identified three factors with eigen values larger than 1.0. The scree plot of the first EFA (with five factors identified) (see Figure 4-1), also indicated that the three-factor solution was more appropriate. The factor loadings of the three-factor solution are presented in Table 4-2. The three factors accounted for 61.2% of the variance. Only loadings with factor scores greater than 0.4 are reported to facilitate factor interpretation.

	F 1	F 2	F 3	<b>F</b> 4	F 5
In this online community,					
sa : I feel that some members can					
oa : I feel that I can					
sa7, tell my profession.	.736				
sa3, find out my email address or homepage address.	.705				
sa5, guess how old I am.	.703				
sa4, recognize my IP address.	.701				
sa9, tell our household income level.	.669				
sa8, tell how much education I had.	.662				
sa2, recognize my username.	.660				
sal, recognize my name.	.610				
sa6, tell my marital status.	.473				
sa13, match me with pictures I posted.	.432				
sa10, tell my hobbies or interests.	.405				
oa6, tell the marital status of other members.		.858			
oa7, tell the profession of other members.		.826			
oa8, tell how much education other members had.		.800			
oa5, guess how old other members are.		.782			
oa9, tell the household income level of other members.		.670			
oa10, tell the hobbies or interests of other members.		.666			
sa12, recognize me from expressions or words I use					
frequently.			.769		
oall, recognize some members from their writing					
style.			.739		
oa12, recognize some members from expressions or					
words they use frequently.			.738		
sall, recognize me from my writing style.			.708		
oal, recognize names of some members.				.909	
oa2, recognize usernames of some members.				.755	
oa13, match other members with pictures they posted.					
oa4, recognize some members via their IP addresses.					689
oa3, find out email addresses or homepage addresses					
of some members.				.421	572

Table 4-1. Factor Loadings -- Five-Factor Solution

	Factor 1	Factor 2	Factor 3
In this online community,			
sa : I feel that some members can			
oa : I feel that I can			
sa2, recognize my username.	.770		
sal, recognize my name.	.748		
sa7, tell my profession.	.732		
sa3, find out my email address or homepage address.	.726		
sa5, guess how old I am.	.700		
sa9, tell our household income level.	.658		
sa8, tell how much education I had.	.650		
sa4, recognize my IP address.	.637		
oa6, tell the marital status of other members.		858	
oa7, tell the profession of other members.		854	
oa8, tell how much education other members had.		815	
oa5, guess how old other members are.		781	
oa9, tell the household income level of other members.		702	
oa10, tell the hobbies or interests of other members.		644	
oa12, recognize some members from expression or			
words they use frequently.			.879
oall, recognize some members from expressions or			
words they use frequently.			.856
sal2, can recognize me from expressions or words I use			
frequently.			.681
sall, recognize me from my writing style.			.634
oa2, recognize the names of some members.			.603
oa4, recognize some members via IP addresses.			.525
oal, recognize the names of some members.	1		4

# Table 4-2. Factor Loadings -- Three-Factor Solution

Figure 4-1. Scree Plot of First EFA



Items loaded on Factor 1 were all SA items, especially, items for name (ID, name), locatability (email address, IP address), and biographic information (job, age, income, education) among the five types of identity information. Factor 2 includes items for OA. Unlike in Factor 1, items only for biographic information (marriage status, job, education, age, income, hobby) consisted of Factor 2. Factor 3 was a combination of items for communication pattern and style in both SA and OA (writing style, frequently used words and expressions), an item for OA name (ID), and an item for OA locatability (IP address). Item oal was not independently loaded to any of the three factors.

The results of the second EFA pointed to a three-factor model that differs from the originally hypothesized two-factor model. The major point of divergence is on the separation of communication pattern and style from SA and OA. The findings suggest that items for SA and OA communication pattern and style might represent a third factor.

To confirm these EFA analyses, a series of confirmatory factor analyses (CFAs) were performed on this three-factor solution.

# Confirmatory Factor Analysis on Perceived Anonymity

A series of second-order CFAs were conducted on the three factors generated from the second EFA. To set scales for the second-order factors, the variance of PA was fixed to 1.0. Equality constraints were put on residual variances for factors 1 and 3, using the critical ratio difference method in order to solve the just-identification problem at the upper level of the CFA model (Byrne, 2001).<sup>12</sup> The findings are presented in Table 4-3 and Figure 4-2. In the present study, parameters were estimated using Maximum Likelihood Method. Overall goodness-of-fit was evaluated using multiple indices of goodness-of-fit rather than the goodness-of-fit chi-square, which is considered overrestrictive as an evaluation of good-fit, due to its sensitivity to sample size (Kline, 2004). The indices adopted in the present study were the normed chi-square (X<sup>2</sup>/df; Carmines & McIver, 1981), the comparative fit index (CFI; Bentler, 1990), the normed fit index (NFI; Bentler & Bonnet, 1980), the nonnormed fit index (NNFI; Marsh, Balla, & McDonald, 1988), and the root mean square error of approximation (RMSEA: Hu & Bentler, 1999). Values greater than .9 for CFI, NFI, and NNFI (Bentler, 1990), and less than 3 for X<sup>2</sup>/df (Kline, 2004) are considered to be a good fit, whereas values less than .08 for RMSEA

<sup>&</sup>lt;sup>12</sup> It is critical that the identification status of the higher order portion should be checked first when hierarchical models are tested. With only three first-order factors, the higher order structure of the present CFA model is just-identified unless a constraint is put on at least one parameter in the upper level of the model. To address this identification issue, the differences between residual variances were examined, and residual variances for factors 1 and 3 were found equal in the population. Equality constraints were placed on the two residual variances.

indicate that there is adequate fit (Hu & Bentler, 1999), although values approaching .95 for the first three indices and .05 for RMSEA are preferred.

For the first second-order CFA (CFA PA-1),<sup>13</sup> all indices except for RMSEA indicated a good model fit ( $X^2/df = .5.481$ , CFI=.954, NFI=.945, NNFI=.942, RMSEA=.122) (see Table 4-3). However, first-order factor loadings from Factor 3 to items oa2 and oa4 were very low (.436 and .539 respectively). Factor loadings should be greater than .70 for convergent validity (Fornell & Larcker, 1981). Accordingly, another CFA was performed without the two low factor loading items (CFA PA-2). The lowest factor loading was .65 (Factor 1 to sa9). Excluding items oa2 (OA, ID) and oa4 (OA, IP address), Factor 3 now includes items for communication pattern and style only. Fit indices also showed similar results to the first CFA's ( $X^2/df = 6.370$ , CFI=.952, NFI=.943, NNFI=.937, RMSEA=.134) (see Table 4-3).

The values of X<sup>2</sup>/df and RMSEA recommended modification of the model CFA PA-2 (6.370 and .134, respectively). To modify CFA PA-2, a covariance between e16 and e17 was added to CFA PA-2-1, following a modification index (see Table 4-4). Substantively, this covariance makes sense because items oa12 and oa11 measure the same type of identify information (communication pattern and style, OA). Another covariance between e4 and e8 was added to CFA PA-2-2. The covariance was accepted since items sa1 (name) and sa2 (ID) are the same type of SA – name. A third error covariance between e2 and e6 was added to CFA PA-2-3. Items sa7 (job) and sa8 (education) are items for SA biographic information. As demographic items, these two items are closely related. The last error covariance was added to CFA PA-2-4. Items sa9

<sup>&</sup>lt;sup>13</sup> To set scales for the first-order factors, the highest loading in each factor (sa2 for factor 1, oa6 for factor 2, and sa12 for factor 3) was fixed to 1.0.

(SA) and oa9 (OA) are for education. Table 4-4 presents how much each modification improved a previous model. The fit indices finally reached the cutoffs in CFA PA-2-4  $(X^2/df = 2.926, CFI = .983, NFI = .975, NNFI = .978, RMSEA = .080)$ , therefore, any further modification stopped. Seven of 18 first-order factor loadings were lower than .70. The lowest first-order factor loading is .60 from Factor 3 to oa12 (see Figure 4-2).

Tabl	e 4-	.3	Fit.	Indic	es hv	Model
1401	U -T -	2.	1 11	Indic	<b>U</b> 3 U 1	1 TOUCI

Model	$\chi^2$	df	$X^2/df$	$X^2_{diff}$	df <sub>diff.</sub>	CFI	NFI	NNFI	RMSEA
CFA PA-1	915.408 *	147	5.481			.954	.945	.942	.122
CFA PA-2	840.833 *	132	6.370			.952	.943	.937	.134
CFA	551.400 *	131	4.209	289.433 *	1	.971	.963	.963	.103
PA-2-1									
CFA	456.492 *	130	3.511	94.908 *	1	.978	.969	.971	.091
PA-2-2									
CFA	406.098 *	129	3.148	50.394 *	1	.981	.973	.975	.085
PA-2-3									
CFA	374.555 *	128	2.926	31.543 *	1	.983	.975	.978	.080
PA-2-4									

Note. CFA PA-2-1 to 2-4 compared to its previous model, respectively. \* p < .05

 Table 4-4. Modification Indices by Model

Model	Description of parameter	Modification index $X^{2}(1)$
CFA PA-2	b/w e16 and e17	203.426 *
CFA PA-2-1	b/w e4 and e8	83.988 *
CFA PA-2-2	b/w e2 and e6	44.488 *
CFA PA-2-3	b/w e5 and e13	29.357 *

Note. Only the highest index is reported in each model.

\* *p* < .05

Figure 4-2. Final CFA Model (Model CFA PA-2-4)



Significance: p < .001	
Fit indices:	
X2 (129) = 375.365	NFI =.975
X2/df = 2.910	NNFI =.978
CFI = .983	<b>RMSEA</b> =.080

Convergent validity was evaluated for the three factors based on using three criteria recommended by Fornell and Larcker (1981): (1) all measurement factor loadings must be significant and exceed .70, (2) construct reliabilities must exceed 0.80, and (3) average variance extracted (AVE) by each construct must exceed the variance due to measurement error for that construct (that is, AVE should exceed 0.50). All indicator factor loadings were significant at the 0.05 significance level, and the lowest value was .60 (from Factor 3 to oa12) (see Figure 4-2 and Table 4-5). Construct reliability ranged from .856 to .906. Cronbach alphas ranged between .886 and .906. AVE ranged from .501 o .618 (Table 4-6). The results satisfied all criteria except for the size of factor loadings. Even though seven of 18 factor loadings were smaller than .70, they were not smaller than .60 and satisfied Anderson and Gerbing's (1988) criteria that an individual item's standardized coefficient is significant, namely greater than twice its standard error (i.e., t-value >2). Table 4-5 shows that coefficients for all items greatly exceed twice their standard error.

For discriminant validity, Fornell and Larcker (1981) suggested that AVE for each construct should exceed the square correlation between any pair of constructs. The highest squared correlation was .465 between Factors 1 and 3, which was smaller than the lowest AVE (.501 for Factor 1). Therefore, the test for discriminant validity was met.

Table 4-5. CFA Results

Factor	Item	Mean	Standard	Standardized	t-Statistic
			deviation	factor loading	for FL
Factor 1	sa5	4.096	1.637	.789	
	sa7	4.286	1.700	.689	12.141
	sa3	4.472	1.779	.770	13.839
	sa2	4.412	1.806	.667	11.696
	sa9	5.096	1.463	.658	11.882
	sa8	4.286	1.544	.638	11.094
	sa4	4.663	1.821	.711	12.625
	sal	4.243	1.902	.628	10.914
Factor 2	0a6	3.580	1.678	.802	
	oa7	4.116	1.578	.883	17.569
	oa8	4.123	1.588	.820	15.926
	oa5	3.993	1.545	.796	15.304
	oa9	4.468	1.597	.702	13.401
	oa10	3.794	1.551	.700	12.962
Factor 3	sa12	4.385	1.669	.905	
	oa12	4.781	1.704	.600	11.591
	oall	4.631	1.714	.632	12.471
	sal1	4.219	1.691	.929	21.679

Table 4-6. Convergent and Discriminant Validity

					Factor correlations (squared)				
	# of	Cronbach	Construct						
Factor	items	Alpha	Reliability	AVE	Factor 1	Factor 2	Factor 3		
Factor 1	8	.888	.889	.501					
Factor 2	6	.906	.906	.618	.424 (.180)				
Factor 3	4	.885	.856	.610	.682 (.465)	.405 (.164)			

Note. Construct Reliability (CR) =  $(\sum \lambda)^2 / [(\sum \lambda)^2 + \sum (1 - \lambda^2)]$ Average Variance Extracted (AVE) =  $\sum \lambda^2 / [\sum \lambda^2 + \sum (1 - \lambda^2)]$ 

Contrary to the hypothesized two-factor structure, the EFA and the second-order CFA analyses generated a three-factor solution. Examining items revealed themes for each factor. Factor 1 included SA items for name (ID, name), locatability (email address, IP address), and biographic information (job, age, income, education) among the five types of identity information. Factor 2 included items for OA. Unlike in Factor 1, items only for biographic information (marriage status, job, education, age, income, hobby) consisted of Factor 2. Factor 3 was a combination of items for communication pattern and style in both SA and OA (writing style, frequently used words and expressions). Therefore, Factor 1 was named as self-anonymity (SA), Factor 2 as other-anonymity (OA), and Factor 3 as discursive anonymity (DA) (see Table 4-7). Of interest points are: (1) DA was identified as a separate factor from SA and OA; (2) among the five types of identify information, audio-visual information was not included in any of the three factors, suggesting that this type was not a contributing factor in PA, or was a distinct factor unto itself; and (3) only items of biographic information were included in OA, implying that OA was not decided by name and locatability information. The discrepancy between SA and OA indicates unbalanced anonymity perception between self and others. It reflects a tendency that people are more sensitive to their than to others'online privacy.

Among the three sub-dimensions of PA, OA seemed the least contributing dimension. Its second-order path from PA was the lowest (Beta = .50) while the other two paths were of the same size (PA to SA, Beta = .84; PA to DA, Beta = .81). This result reflects that online community members tended to be self-focused.

The separation of DA from SA and OA demonstrated the importance of the communication factor in determining anonymity perception. It concurred with previous studies that deal with discursive anonymity separately (Anonymous, 1998; Scott, 1999).

Table 4-7. Final Items by CFA

Factor	Item	Item	Type of
	No.		Identity
			Info.
SA	sal	Some members can recognize my name.	N
	sa2	Some members can recognize my username.	N
	sa3	Some members may find out my email address or homepage	
		address.	L
	sa4	Some members can recognize my IP address.	L
	sa5	Some members can guess how old I am.	BIO
	sa7	Some members can tell my profession.	BIO
	sa8	Some members can tell how much education I have had.	BIO
	sa9	Some members can tell our household income level.	BIO
OA	oa5	Sometimes, I can guess how old other members are.	BIO
	oa6	Sometimes, I can tell the marital status of other members.	BIO
	oa7	Sometimes, I can tell the profession of other members.	BIO
	oa8	Sometimes, I can tell how much education other members have	
		had.	BIO
	oa9	Sometimes, I can tell the household income level of other	
		members.	BIO
	oa10	Sometimes, I can tell hobbies or interests of other members.	BIO
DA	sall	Some members can recognize me from my writing style.	CPS
	sa12	Some members can recognize me from expressions or words I	
		use frequently.	CPS
	oa11	I can recognize some members from their writing styles.	CPS
	oa12	I can recognize some members from expressions or words they	
		use frequently.	CPS

Note. All items were reverse-coded.

SA, Self-Anonymity; OA, Other-Anonymity; DA, Discursive Anonymity N, Name or Pseudonym; L, Locatability; BIO, Biographic information; CPS, Communication Pattern and Style

# Perceived Anonymity Affecting Online Public Disclosure

The deindividuation model was tested, and the results are presented in Figure 4-3.

The model exhibited good fit with observed data ( $X^2/df = 2.487$ , CFI=.976, NFI=.960,

NNFI=.972, RMSEA=.070). Of greater interest are the path estimates and variance

explained in each dependent variable. Two structural paths, perceived anonymity to

online public disclosure and evaluation concern were significant at the .05 significance

level (H1a, Beta = -.22 and H2a, Beta = -.35). As hypothesized, perceived anonymity

decreased evaluation concern (H2a). Contrary to hypothesis, however, perceived anonymity negatively affected online public disclosure (H1a). Evaluation concern to online public disclosure (H3a) was not significant.

The SIP-based model is an equivalent model of the deindividuation model (see Figure 4-4). It is recommended that equivalent models be considered in SEM analysis (Stelzl, 1986). Equivalent models yield the same predicted correlations or covariances, but they do so with a different configuration of paths among the same variables. For a given path model, there may be many equivalent variations. A choice among equivalent models should be based on theoretical rather than mathematical grounds. The SIP-based model's fit indices showed the same results as the deindividuation model's ( $X^2/df = 2.487$ , CFI=.976, NFI=.960, NNFI=.972, RMSEA=.070). Two structural paths, perceived anonymity to online public disclosure (H1b, Beta = -.24) and perceived anonymity to evaluation concern (H2b, Beta = -.33) were significant in the hypothesized direction at the .05 level. The path from online public disclosure to evaluation concern was in the hypothesized (positive) direction, although not significant (H3b).

The examination of model fit indices and path significance showed that the SIPbased model represented the data better than did the deindividuation model. The subjects of online community members were more willing to disclose negative aspects about themselves through publicly posted messages as they perceived that they could recognize each other more. Previous studies on self-disclosure in CMC maintained the mediating role of evaluation concern. That is, anonymity decreases evaluation concern, which in turn, decreases self-disclosure. The present study invalidated such an explanation by supporting the SIP-based model over the deindividuation model. The large proportion of variance left unexplained in each dependent variable suggests that other predictors may be missing from the current model.









Finally, the refined SIP-based model with need for social support as a predictor for perceived anonymity and online public disclosure and perceived community size as a controlling variable, was tested. Separate paths to SA, OA and DA were directed from need for social support and perceived community size instead of single paths to PA. No path could be directed to PA because the variance of PA was fixed to 1.0 in order to set scales.

Results for the three paths, PA to OPD, PA to EC, and OPD to EC, were comparable to the SIP-based model. Hypotheses 4 and 5 were supported (H4, Beta = -.16 for SA, -.19 for OA, and -.13 for DA; H5, Beta = .26). Need for social support decreased each sub-dimension of PA, and increased OPD as hypothesized (see Figure 4-5 and Table 4-8).





Significance: p < .001Fit indices: $X^2$  (761) = 1717.651 $X^2/df = 2.257$ CFI = .974RMSEA = .065\* p < .05

PA, Perceived Anonymity SA, Self Anonymity OA, Other Anonymity DA, Discursive Anonymity OPD, Online Public Disclosure EC, Evaluation Concern NSS, Need for Social Support PCS, Perceived Community Size

Hypothesis		Standard. Coefficients	Unstandard. Coefficients	S.E.	C.R.	
Hla	PA (+) OPD	216	341	.112	-3.056	p<.05
H2a	PA (-) EC	347	410	.077	-5.346	p<.05
H3a	EC (-) OPD	.079	.106	.085	1.248	ns
Hlb	PA (-) OPD	243	384	.104	-3.711	p<.05
H2b	PA (-) EC	329	389	.079	-4.911	p<.05
H3b	OPD (+) EC	.074	.056	.045	1.248	ns
H1b <sup>a</sup>	PA (-) OPD	204	322	.101	-3.173	<i>p</i> <.05
H2b <sup>a</sup>	PA (-) EC	338	400	.079	-5.100	p<.05
H3b <sup>a</sup>	OPD (+) EC	.088	.066	.044	1.501	ns
H4 <sup>a</sup>	NSS (-) SA	159	153	0.057	-2.676	p<.05
	NSS (-) OA	191	190	0.059	-3.206	p<.05
	NSS (-) DA	126	141	0.066	-2.150	p<.05
H5ª	NSS (+) OPD	.022	.303	.068	4.424	p<.05
	PCS (c) SA	.124	.026	.013	2.047	p<.05
	PCS (c) OA	.161	.035	.013	2.725	p<.05
	PCS (c) DA	.103	.026	.015	1.726	ns
	PCS (c) OPD	.022	.006	.015	.380	ns
	PCS (c) EC	069	013	.011	-1.191	ns

Table 4-8. Results by Hypothesis

Note.

a. Results from the refined SIP-based model

(+) positive relationship hypothesized;(-) negative relationship hypothesized;(c) controlled, not hypothesized

PA, Perceived Anonymity

SA, Self-Anonymity OA, Other-Anonymity DA, Discursive Anonymity OPD, Online Public Disclosure EC, Evaluation Concern NSS, Need for Social Support PCS, Perceived Community Size

Multiple Group Analysis

To assess the refined SIP-based model in different GI (group identification) groups

(RQ1), measurement invariance was first tested. A composite score for GI was computed,

and categorized into low and high GI groups using median split. Items gi2, gi4, and gi7

consisted of GI (alpha = .687).<sup>14</sup> The results are presented in Table 4-9.

<sup>&</sup>lt;sup>14</sup> Reliability analysis showed that four items including three reverse-coding items (gi1, gi3, gi5, and gi6) were not reliable. Excluding the four items, alpha reliability was .687.

It is customary to consider a baseline model that is estimated for each group separately without equality constraints (single group analyses). The overall fit of the measurement model explained the data somewhat better for high GI group than for low GI group (low GI,  $X^2/df = 2.010$ , CFI=.962; high GI,  $X^2/df = 1.797$ , CFI=.966). The  $X^2(1556)$  statistic for the model with equality-constraints on all first-order factor loadings is 2928.103 (Model 1).<sup>15</sup> The change in the overall chi-square ( $X^2_{diff.}(34) = 31.367$ ) was not statistically significant. This result implies that the first-order factor loadings as a set did not differ significantly across low and high GI groups. In model 2, all second-order factor loadings were additionally fixed to be invariant across the groups. The overall chisquare change was not statistically significant ( $X^2_{diff.}(37) = 44.664$ ). Finally, all structural paths were constrained as equal. The chi-square change was not significant again ( $X^2_{diff.}$ (49) = 60.464). The results suggest that the measurement and the structural paths were comparable in high and low GI groups (see Figures 4-6).

Model	$X^2$	Df	$\frac{1}{X^2/df}$	$X^2_{diff}$	df <sub>diff.</sub>	CFI
Single group analyses						
Low GI	1529.399 *	761	2.010			.962
High GI	1367.328 *	761	1.797			.966
Multiple group analyses						
Baseline: Unconstrained	2896.736 *	1522	1.903			.964
Model 1: All 1 <sup>st</sup> -order factor loadings	2928.103 *	1556	1.882	31.367	34	.964
invariant						
Model 2: Model 1 plus	2941.400 *	1559	1.887	44.664	37	.963
all 2 <sup>nd</sup> -order factor loadings invariant						
Model 3: Model 2 plus	2957.200*	1571	1.882	60.464	49	.963
all structural paths invariant						

Table 4-9. Multiple Group Analysis – Low vs. High Group Identification (GI)

Note. All models compared with Baseline model.

<sup>&</sup>lt;sup>15</sup> Although it is theoretically possible, cross-group equality constraints are usually not imposed on estimates of variances or covariances. This is because groups may be expected to differ in their variabilities on either the latent factors or unique factors (MacCallum & Tucker, 1991).





X2 (1571) = 2957.200 NFI = .925 X2/df = 1.882 NNFI = .960 CFI = .963 RMSEA = .055 Path coefficients, Low GI (High GI); \* p < .05

PA, Perceived Anonymity	OPD, Online Public Disclosure
SA, Self Anonymity	EC, Evaluation Concern
OA, Other Anonymity	NSS, Need for Social Support
DA, Discursive Anonymity	PCS, Perceived Community Size

#### Secondary Analyses

Three secondary analyses were performed. The first analysis compared perceived anonymity and technical anonymity in affecting online public disclosure and evaluation concern. The second analysis examined separate paths from self-anonymity, otheranonymity, and discursive anonymity to online public disclosure and evaluation concern. Lastly, reverse paths from online public disclosure to the three dimensions of perceived anonymity were tested.

#### Comparison between Perceived Anonymity and Technical Anonymity

Technical anonymity was operationalized as nominal anonymity.<sup>16</sup> Independent samples t-tests were conducted on perceived anonymity (PA), online public disclosure, and evaluation concern by technical anonymity (TA) (see Table 4-10). No statistical difference was found in perceived anonymity between identified and anonymous groups. The mean scores of online public disclosure and of evaluation concern were higher when members did not have to reveal their names in their favorite message board (anonymous message board) than when they did have to (identified message board).

It should be noted that nominal anonymity and perceived anonymity affected online public disclosure and evaluation concern in the opposite direction (i.e. nominal anonymity increased both). The relationships appear to be spurious. That is, the purpose

<sup>&</sup>lt;sup>16</sup> Subjects were asked whether they have to or do not have to reveal their names in their favorite message board. Sixty-five of 301 subjects answered that they have to reveal their names, and the others that they do not have to. Composite score was used for perceived anonymity, online public disclosure, and evaluation concern.

of the most popular anonymous board in *MissyUSA* is catharsis. Members reveal their most intimate feelings and thoughts, often too strongly to be endorsed by even other *MissyUSA* members. Therefore, rather than nominal anonymity itself, the purpose of the anonymous board seemed to affect online public disclosure and evaluation concern. Members who want to vent potentially self-disparaging emotions use the catharsis board, and they expect critical opinions about their venting from other members. The level of perceived anonymity did not differ between identified and anonymous boards. This finding supports the SIP model's argument against technological determinism.

	Technical Anonymity	
	Identified	Anonymous
	(N=65)	(N=236)
Perceived Anonymity		
Mean	78.000	77.485
SD	21.535	18.867
		l. <u></u>
Observed Mean Difference	.515	
t-value	.188	
df	91.021	
Significance (two-tailed)	.862	
<b>Online Public Disclosure</b>		
Mean	28.692	32.800
SD	12.911	11.728
Observed Mean Difference	-4.108	
t-value	-2.315	
df	95.061	
Significance (two-tailed)	.023	
<b>Evaluation Concern</b>		
Mean	12.195	14.117
SD	5.723	6.032
		l
Observed Mean Difference	-1.922	
t-value	-2.299	
df	106.453	
Significance (two-tailed)	.020	

Table 4-10. Mean Differences by Technical Anonymity – Perceived Anonymity, Online Public Disclosure and Evaluation Concern

Note. Equal variance not assumed. Composite scores were used.

#### Separate Paths from Self-, Other-, and Discursive Anonymity

### to Online Public Disclosure and Evaluation Concern

The results show more detailed relationships among perceived anonymity, online public disclosure, and evaluation concern. First, other-anonymity (OA) did not affect either online public disclosure or evaluation concern. It is consistent with the finding that OA was the least important among the three sub-dimensions. Second, self-anonymity decreased evaluation concern, but not online public disclosure, and discursive anonymity decreased online public disclosure, but not evaluation concern (see Figure 4-7).

#### Reverse Paths from Online Public Disclosure to Perceived Anonymity

The SIP-based model predicted that perceived anonymity causes reduced online public disclosure, and was supported. However, it cannot be ruled out that online public disclosure decreases perceived anonymity. Therefore, reverse paths from online public disclosure to self-, other-, and discursive anonymity were tested. Online public disclosure decreased SA and DA, but not DA (see Figure 4-8). Figure 4-7. Separate Paths from Self-Anonymity, Other-Anonymity, and Discursive Anonymity to Online Public Disclosure and Evaluation Concern



X2/df = 2.225 NNFI = .972 CFI = .975 RMSEA = .064 \* p < .05

PA, Perceived Anonymity SA, Self-Anonymity OA, Other-Anonymity DA, Discursive Anonymity OPD, Online Public Disclosure EC, Evaluation Concern NSS, Need for Social Support PCS, Perceived Community Size





Significance: p < .001

OA, Other-Anonymity

DA, Discursive Anonymity

Fit indices:

X2 (758) = 1686.856	NFI =.956
X2/df = 2.225	NNFI =.972
CFI = .975	RMSEA =.064
* n < 05	

< .05 PA, Perceived Anonymity SA, Self-Anonymity

**OPD**, Online Public Disclosure EC, Evaluation Concern NSS, Need for Social Support PCS, Perceived Community Size

# CHAPTER 5

### DISCUSSION

# Summary of Results

One of the most distinctive features in CMC compared with FtF communication is anonymity, resulting from restricted bandwidth. In online communities, especially in online social support communities, anonymity is believed to play a role in promoting hyperpersonal communication among participants (Walther & Boyd, 2002). Anonymity in CMC encourages people to reveal negative facts about themselves which they usually hide from others off-line. Previous studies have underscored this point but one major limitation was that anonymity had been defined as a dichotomous variable. This study found that anonymity is a multi-dimensional construct that can be measured on a continuum and showed how the redefined construct differs in affecting online selfdisclosure. The SIP-based model was found to better explain relationships among perceived anonymity, online public disclosure and evaluation concern, than the deindividuation model that previous online self-disclosure studies featured.

First, perceived anonymity consists of three sub-dimensions, self-anonymity, other-anonymity and discursive anonymity. Second, perceived anonymity (PA) decreased online public disclosure (OPD), supporting the SIP model. Evaluation concern (EC) did not mediate between perceived anonymity and online public disclosure. Need for social support (NSS) decreased perceived anonymity and increased online public disclosure. Third, the measurement and the path coefficients were comparable across low and high

identification group. Fourth, the effects of technical anonymity (defined as nominal anonymity) and perceived anonymity on online public disclosure were in opposite directions. Nominal anonymity increased online public disclosure. Fifth, among the three sub-dimensions, discursive anonymity was the contributing dimension that decreased online public disclosure. Only self-anonymity decreased evaluation concern. Finally, the data also supported reverse causations between online public disclosure and SA and DA, but not OA.

# Contributions of the Study

# **Theoretical Contributions**

The findings contribute to our theoretical understanding of perceived anonymity in online social support communities. First, the present study supported the notion that perceived anonymity is different from technical anonymity (often defined as nominal anonymity or visual anonymity), as employed by SIDE theory and GDSS research. It found no support for the deterministic view of CMC, demonstrating that technically imposed anonymity does not necessarily define the mental state of communicator (see Table 4-10).

The two competing models – deindividuation model and SIP-based model – represent two cases in which perceived anonymity and technical anonymity are differently related. First, CMC systems induce corresponding levels of perceived anonymity. This is the case in which SIDE and GDSS experiments and previous studies about online selfdisclosure were conducted. CMC users had no prior history of interaction, less interaction time was allowed, and/or no future interaction was anticipated. They were strangers to each other. Technically imposed anonymity perceptions thus were left intact. If participants revealed negative aspects of the self, it was because they felt deindividuated, lowering public self-awareness, and decreasing accountability. New members in an online community who pour out unfiltered emotions or hurt feelings perhaps can be explained through this deindividuation model. Second, perceived anonymity does not match technical anonymity when technical conditions no longer bind CMC users' anonymity perceptions through continuous interactions, as in real online communities. CMC users overcome physical constraints. Some users perceive identifiability in technically anonymous conditions. Online community members who regularly participated sensed reduced perceived anonymity, and felt more confident that they would receive warm and caring responses from other members even when they revealed negative personal stories. The monitoring (or "lurking") period which members usually observe before posting messages supports the SIP-based model. Community members seem to wait until they build sufficient rapport and can anticipate how other members respond to their self-disclosing. The present study corresponded to this second case. These two relationships can be described graphically as in Figure 5-1. As shown, technical anonymity is a necessary, but not sufficient, condition of perceived anonymity.

Figure 5-1. Perceived Anonymity and Technical Anonymity



TA, Technical Anonymity; PA, Perceived Anonymity PA corresponding to TA PA not corresponding to TA

Second, the study ascertained the separate dimension of discursive anonymity and its importance in CMC. As the SIP model maintained, CMC users develop ways to verbalize non-verbal cues, and gradually adapt to such verbalizations. Just as speaking and listening are the basic communication skills in FtF interactions, so are the abilities to verbalize social information and to detect others' unique communication styles and patterns valuable in the textualized world. In this regard, the separation of discursive anonymity (DA) from self- (SA) and other-anonymity (OA) appears a natural result. Consistent with the result is another finding that among the three sub-dimensions of perceived anonymity, only DA, but not SA or OA, affected online public disclosure. Communication pattern and style are the unique parts of online identity which send out subtle cues about the person's personality

The definition of discursive anonymity in this study – a perceived lack of individuating communication pattern and style in a message -- was more pertinent to the SIP model's arguments on the verbalization of social information than Anonymous'

(1998). Anonymous defined discursive anonymity as the inability to attribute a specific message to a message source, compared with visual anonymity. According to this definition, all other types of identity information except for audio-visual information (that is, name, locatability, and social categorization) included in a message may also determine discursive anonymity. In another study, the same researcher (Scott, 1999) operationalized discursive anonymity as whether GDSS participants placed their names before each comment or not – in other words, nominal anonymity.

Third, the theoretical applicability of the SIP model was supported in a large group communication context. Communication in online communities is a mixture of interpersonal and (large) group communication. Messages exchanged in an online community originate from individual members, directed to a specific other(s), but shared with the whole community. Studies about relational development in online communities, however, have focused on interpersonal relationships, which sometimes migrate offline and go beyond the realm of the community (Parks & Floyd, 1996; Utz, 2000). The other important aspect, that participants also publicly communicate with the community as a whole, has been largely neglected. Not only the SIP model but also other CMC theories such as SIDE theory and hyperpersonal communication were usually tested in small group conditions. The largest group was Walther's 54 international interactants using CMC for a class project (1997). The size of successful online communities such as *MissyUSA* can grow limitlessly if technically supported. It appears that only the SIP model is a valid theoretical framework for a large group communication context of online communities among the current CMC theories, at least when explaining online public disclosure.

Fourth, the results illuminated a social exchange approach to CMC, previously asserted but unverified within SIP. Focusing on relational developments in CMC, SIP

adopted two major theories on how relationships develop through communication in FtF interactions – Uncertainty Reduction Theory (URT) and Social Penetration Theory (SPT). Social exchange, a background theory common in the two theories, explained why perceived anonymity reduces members' willingness to talk about themselves in depth publicly in online social support communities. In situations of high perceived anonymity, people expect more costs than rewards as a result of self-disclosure.

The two theories - and also SIP - emphasize the role of information exchange in relational development (Littlejohn, 1992). Perceived anonymity in the present study also reflects such idea by defining it as a perceived lack of identity information exchanged among CMC users. Uncertainty levels increase with perceived anonymity. Previously, URT has been employed to predict higher levels of self-disclosure in CMC than in FtF (Tidwell & Walther, 2002), or when perceived anonymity is high (Snyder, 2004). That is, uncertainty in CMC or in communication situations where anonymity perceptions are higher, motivates people to seek more information in order to increase predictability. Such efforts, however, were not successful. There was no significant difference in the proportion of intimate self-disclosure between CMC and FtF conditions (Tidwell & Walther, 2002), or the amount of self-disclosure was higher when perceived anonymity was lower (Snyder, 2004). Such studies failed to predict hypothesized relationships because they focused only on the third axiom of URT – high levels of uncertainty cause increases in information seeking behavior. As uncertainty levels decline, information seeking behavior decreases – which has been criticized for its validity (Kellerman & Reynolds, 1990). More directly, in axiom 4, URT predicts that high levels of uncertainty in a relationship decrease the intimacy level of communication content and that low levels of uncertainty produce high levels of intimacy (Berger & Calabrese, 1975). A perceived

lack of identity information exchanged among community members increases their uncertainty levels which, in turn, lowers intimate self-disclosure.

Fifth, the failure of evaluation concern to mediate between perceived anonymity and online public disclosure suggests that evaluation concern is not so important in the SIP-based model as in the deindividuation model. The result contradicted the public selfawareness explanation for increased self-disclosure in CMC. The reasoning of the public self-awareness explanation is that decreased public self-awareness in CMC reduces concerns about others' evaluations, and, freed from evaluation apprehension, CMC users tend to disclose themselves more (Prentice-Dunn & Rogers, 1982). The present results showed that perceived anonymity decreased evaluation concern (EC), but the decreased level of EC did not lead to more online public disclosure. The reason why the deindividuation model failed appears to be that the population of this study was different from that of previous online self-disclosure studies. Members in online social support communities get together based on the same life circumstances they face. They are willing to side with each other. Social support, rather than judgmental comments, is what they expect first. Expected rewards (i.e. social support) were higher than expected costs (i.e. negative evaluation). Researchers who explored the deindividuation model had subjects without any prior contact in their experiments (Joinson, 2001). They did not share any commonality. In SIDE terms, individual salience was high. They had no reason to expect positive responses from others first. The experimental results were applied to how web-based surveys increase willingness to answer sensitive questions (Joinson, 1999; 2005).

# **Practical Implication**

The present study suggests a practical implication that concerns anecdotal evidence that supports the existence of discursive anonymity as a separate dimension. In one of MissyUSA's anonymous message boards, for example, members actively identified those who continuously post messages that dispirited the entire community based on message tone and writing style, and collectively sanctioned such members by notifying other members that the messages contained undesired content. In another anonymous message board, discussion among members often became inflammatory because members mistakenly attributed some messages to each other. Such cases illustrate that discursive anonymity is difficult to overcome as well as achieve. In the first case, those who spread dispiriting messages may disguise themselves, relying on nominal anonymity. However, they overlooked that additional caution should be taken in order to achieve discursive anonymity. The second case exemplified that nominal anonymity does not define the subjective anonymity perception. Participants in anonymous boards believed that they could correctly link message content with message sources without knowing names. Their subjective perception overcame nominal anonymity. However, such assertion can be erroneous in many cases. Attribution accuracy is another important issue in managing online communities especially in text-based bulletin board systems.

# Limitations and Future Research

# Perceived Anonymity Affecting or Affected by Online Public Disclosure ?

The reconceptualization of anonymity as a measured variable introduced the ambiguity of the direction of causation in this cross-sectional survey study, because the time order could not be controlled as in experiments. It is entirely plausible that online public disclosure causes perceived anonymity. When a member self-discloses, he or she is providing identity information about the self, and becomes a contributing member of the group. Therefore, anonymity perceptions decrease. This rival prediction was tested by the third secondary analysis, and the result showed that this possibility cannot be ruled out (see Figure 4-8). A longitudinal survey design is necessary in order to assess if the SIP-based causation, its reverse causation, or both, are true.

### External Validity and Reliability

The current study endeavored to validate a second-order structure of perceived anonymity. Such attempts usually begin with existing measurements for the construct of interest. Existing measurements are examined based on a relevant theory. In this way, the construct is likelier to cover the breadth of measurement exhaustively. However, the current study started from a theory without any existing measurement. Therefore, it is possible that other dimensions of perceived anonymity (PA) exist but were not conceptualized in the present study. Along with the possible incompleteness, the conceptualization that perceived anonymity depends on the amount of identity

information exchanged among members might overlook the relative importance of identity information. Certain types of anonymity may be more important than others according to types of online communities. For example, in an Internet Relay Chat (IRC) community where the use of an avatar is an integral part of community participation, visual anonymity would be more important than discursive anonymity (Kang & Yang, 2004). The hierarchical multi-dimensional structure of PA should be tested also with other types of samples.

Individual items, especially items for biographic information, would change according to types of online communities. For example, thanks to the homogeneity of subjects in nationality and gender, these biographic items were not included. However, if an online dating community were to be surveyed, such information should play an important role. Perhaps, more items for biographic information may be recommended.

The sample was somewhat homogeneous in terms of culture and gender. Other demographic characteristics such as age, marital status, income and education displayed homogeneity (see Table 3-2). Further, the sample was unique in a sense that *MissyUSA* members are foreigners who still are under the cultural influence of their home country rather than being assimilated into the local culture. These features of the sample might reduce the external validity of the results. Therefore, the construct should be tested for external validity with other types of samples.

The representativeness of the sample was also questionable in terms of community participation level. Nearly 80% of the subjects answered that they visit *MissyUSA* five to seven days per week. Considering that the data was collected for ten days through an online survey, members who visit the community less than five days per week might have been under-sampled. Further, due to the monetary compensation to those who completed
the survey, members familiar with such Internet environments as e-commerce could have been over-sampled.

The lack of external validity is also expected in terms that a particular type of CMC technology – electronic bulletin board system – was the focus of the study. Besides such text-based asynchronous CMC, instant messaging (IM) such as MSN messenger is popular, especially among teens (Lenhart, Madden, & Hitlin, 2005). IM tools dramatically have increased Internet use as a social medium, and fostered a sense of online community among users more than any other CMC application (Alvestrand, 2002). Synchronicity in IM seems to increase levels of perceived intimacy (Hu, Wood, Smith, & Westbrook, 2004), which might affect anonymity perceptions. The scale of PA should be tested across different CMC media.

The grouping variable used in multiple group analysis – low and high identification groups – poses a low reliability problem. The variable was converted from a continuous variable which was originally measured with three items on a Likert-type scale. The original continuous scores were categorized into low and high identification groups using median split. The first source of the problem came from the low alpha reliability of the original continuous measure. That is, the alpha reliability for three group identification items was merely .687, lower than the usual cutoff of .80, but high enough for exploratory work (Nunnally, 1994). The second source lies in the fact that the converted variable is not so appropriate to multiple group analysis as such originally discrete variables as gender. That is, subjects whose continuous group identification scores ranged around the median might have been differently categorized if more reliable measures were employed.

#### Different Functions of Self-Disclosure

Self-disclosure serves various functions such as catharsis, social validation, relationship development, and response solicitation (Derlega & Grzelak, 1979). Different functions of self-disclosure should be noted in relation to perceived anonymity. For example, among several anonymous boards in MissyUSA, two are the most popular -"private talk lounge" and "motherhood." In "motherhood," which can be characterized by solid group identity, members self-disclose in order to solicit or express emotional support. Increased levels of online public disclosure attract more social interactions, which reinforces relational closeness among members. On the contrary, in "private talk lounge" where members share all kinds of distressing experiences such as marital disputes, conflicts with in-laws/neighborhood, problems at work/school, and difficulties living in the U.S. as a foreigner, emotional catharsis is the primary function of self-disclosure. Because of low group identity compared to "motherhood," self-disclosing messages seemed to spawn negatively toned responses rather than supportive ones (announcements are regularly made that the messages are being monitored, and removed if containing potentially harmful content). Future studies may improve understanding of perceived anonymity affecting online public disclosure by examining different purposes of anonymous boards.

#### Explaining the Unexplained

The large proportion of variance remained unexplained in each dependent variable. Need for social support and perceived community size explained 2 to 7 percent of the

variance in self-anonymity, other-other anonymity and discursive anonymity (excluding the portion of the variances explained by perceived anonymity). For online public disclosure, 11 percent of the variances were explained. These results suggest that there would be other variables that can better explain the unexplained variance. The present study proposes four possibly missing variables in the nomological network model. First, Internet self-efficacy (LaRose, Eastin,& Gregg, 2001), Internet social support efficacy (Eastin & LaRose, 2004), or familiarity with or experiences in online communities (Jaffe, Lee, Huang, & Oshagan, 1999) may reduce anonymity perceptions by increasing members' ability to predict others' responses.

Second, trust can explain more variance in online public disclosure. Trust has been studied as an important predictor for Internet-related behaviors such as information sharing (Ridings, Gefen, & Arinze, 2002), online purchase (McKnight, Choudhury, & Kacmar, 2002), and social support exchange (Blanchard & Markus, 2004). Members' trust in their online community or the owner of the community in terms of privacy protection will positively affect online public disclosure (Joinson & Paine, 2005; Henderson & Gilding, 2004; Ryan, 2003).

Third, the uniqueness of the population – Korean married women living in the U.S. – suggests that loneliness or depression, a psychological variable that has been extensively studied in relation to the amount of Internet use (for discussion, LaRose, Eastin, & Gregg, 2001), plays a more important role in explaining online public disclosure. That is, Korean wives in the U.S. feel lonely or depressed in a foreign country generally, so they are more willing to talk about themselves with others in the same situation whom they can meet online.

Finally, the predictive validity of perceived anonymity should be tested also with another anonymity-related behavior, flaming (Taylor & MacDonald, 2002). The current study focused on online public disclosure, a pro-social communication outcome in a specific type of online community – online social support community. The explanatory power might be higher for such anti-social communication outcomes than for pro-social ones.

#### Conclusion

The goals of this research were, first, to create and validate the scale for perceived anonymity, and second, to test its nomological network validity in an online social support community. The results demonstrated that the perceived anonymity construct has a threedimensional hierarchical structure. In addition, perceived anonymity was not bound by nominal anonymity which is technically defined. Perceived anonymity affected online public disclosure negatively, supporting the SIP model.

Not all CMC develops to the hyperpersonal level. Then, how can we explain anecdotal or empirical evidence supporting CMC as a hyperpersonal medium, repeatedly reported from the practice as well as from academia? Perhaps, anecdotal evidence represents extreme cases, which were skimmed from the whole spectrum of CMC from impersonal to hyperpersonal. Empirical evidences might result from weaknesses of experimental research that employed technical, dichotomous definitions of anonymity using subjects with zero history.

Looking inside the CMC phenomenon more closely, the SIP model found that CMC is not inherently different from FtF interaction. When CMC is compared to FtF

interactions, it is often said that CMC has the potential for hyperpersonal communication. CMC researchers proposed higher levels of self-disclosure in CMC as an avenue for hyperpersonal communication, and the role of anonymity was emphasized. Such crossmedia comparisons lead researchers to overlook whether the same prediction holds within CMC. The within-media investigation of this study revealed that relational development in CMC was analogous to that in FtF communication. This research unveiled a theoretical loophole in cross-media comparison studies by creating a valid scale for perceived anonymity and testing it with a sample from a real online social support community.

## APPENDIX A-1

Pretest Protocol and Sorting Instruction -- Korean

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#### 카드 분류 지침서

여섯장의 파란색 카드와 100 장의 노란색 카드를 나누어 드렸습니다. 파란색 카드에는 개념 (연구대상이 되는 특정 현상을 일컫는 용어)과 그 정의 (해당 개념이 무엇을 의미하는지 설명해 주는 기술문)가 카드마다 한 쌍씩 적혀 있습니다. 노란색 카드에는 파란색 카드에 적힌 개념이 일컫는 현상을 구체적으로 보여주는 예가 적혀있습니다. 각 문장들은 설문조사 문항으로 사용될 예정입니다.

파란색 카드에는 사람들이 일상생활 가운데 자기 자신에 대해 느끼는 점과 MissyUSA 회원들이 MissyUSA 에 참여하면서 회원으로서 자기 자신에게 대해 느끼는 점이 6가지 영역으로 제시되어 있고, 노란색 카드에는 그 6가지 영역의 구체적인 예를 보여주는 100개 문장들이 적혀 있습니다. 파란색 카드를 기준으로 노란색 카드들을 분류하시게 됩니다. 카드 분류시 책상을 이용하시는 것이 편하실 것입니다.

1. 먼저 6장의 파란색 카드를 주의깊게 읽어보시기 바랍니다. 이해가 안가는 부분에 대해 연구자에게 질문해 주십시오. 파란색 카드에 적힌 개념과 그 정의가 충분히 이해된 후, 다음 단계로 넘어가 주십시오.

2. 여섯장의 파란색 카드를 책상 위에 한줄로 늘어놓습니다.

3. 100장의 노란색 카드를 한번 훑어 보시고 의문사항은 연구자에게 질문해 주십시오.

4. 노란색 카드를 한 장씩 다시 한번 자세히 읽어봅니다. 노란색 카드에 적힌 문장들이 어떤 개념 (파란색 카드)의 실례를 보여주는지 생각하시면서 해당하는 노란색 카드 아래에 분류하시면 됩니다. 노란색 카드들을 모두 같은 방법으로 분류해 주십시오. 각 파란색에 해당하는 노란색 카드의 숫자는 일정치 않습니다 (반드시 같은 수의 노란색 카드를 파란색 카드에 분류할 필요는 없습니다).

5. 분류결과를 표1에 적어주십시오. 표의 첫번째 행에 파란색 카드의 개념들이 적혀 있습니다. 노란색 카드에 있는 문장번호를 해당 개념 아래 빈칸에 적어 내려 가시면 됩니다.

 다음의 7점 척도를 이용하여 각각의 분류된 문장들이 해당 개념을 얼마나 잘 보여주는지 그 정의에 비추어 평가해 주십시오.

1: 매우 불확실하게 보여준다	2: 불확실하게 보여준다
3: 별로 보여주지 않는다	4: 보통이다
5: 다소 보여준다.	6: 분명하게 보여준다
7: 매우 분명하게 보여준다	

표 1 의 각 문항 옆에 해당번호를 적어주세요.

7. 불확실하거나 부적당한 문항들에 대해서는 여러분의 의견을 적어주세요.

Table 1. 분류결과

Self- Anonymity		Other- Anony	ner- onymity Disclosure		Group Identification		Eval. Concern		Need for Social Support		
문장	평가	문장	평가	문장	평가	문장	평가	문장	평가	문장	평가
면호		면호		만호.		번호		민호		변요	
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L											
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#### 개념,정의,(후보)문항

Self-Anonymity

자기 익명성 정의: 자기 자신이 다른 사람들에게 알려지지 않았거나 아무도 자신을 알아보지 못 할 거라는 인식. 다른 사람이 가지고 있는 자기 자신에 대한 정보가 부족하다는 인식. 한 사람의 신원을 알려주는 정보는 다섯가지 타입으로 나뉜다. 실명 혹은 가명 (별명, 사용자아이디, ...); 소재확인성 (우편주소, 이멜주소, IP 주소, 전화번호, ...); 사회적 분류 (인구통계학적 특성, 소속된 단체, 취미, ...); 의사소통 패턴 및 양식; 음성 및 시각 정보 (사진, 배경음악, ...)

- 1. 어떤 회원들은 내 이름을 알아볼 것 같다.
- 2. 어떤 회원들은 내 사용자아이디를 알아볼 것 같다.
- 3. 어떤 회원들은 내 이멜주소나 홈페이지주소를 알아 낼 수 있을 것 같다.
- 4. 어떤 회원들은 내 집주소나 전화번호를 알아 낼 수 있을 것 같다.
- 5. 어떤 회원들은 내 아이피주소를 알아 볼 것 같다.
- 6. 어떤 회원들은 내 나이를 추측할 수 있을 것 같다.
- 7. 어떤 회원들은 나의 결혼 상태를 알아낼 수 있을 것 같다.
- 8. 어떤 회원들은 내가 직장을 다니는지 혹은 직업이 무엇인지 알아볼 것 같다.
- 9. 어떤 회원들은 내 교육정도를 알아볼 것 같다.
- 10. 어떤 회원들은 우리 가정의 수입정도를 알아볼 것 같다.
- 11. 어떤 회원들은 내 자녀의 수나 아이들의 나이를 알아볼 것 같다.
- 12. 어떤 회원들은 내 취미나 관심사를 알아볼 것 같다.
- 13. 어떤 회원들은 내가 누구인지 나의 글 쓰는 스타일로 알아 볼 것 같다.
- 14. 어떤 회원들은 내가 누구인지 내가 자주 쓰는 표현이나 단어로 알아 볼 것 같다.
- 15. 어떤 회원들은 내가 누구인지 내가 해당 주제에 대해 접근하는 방식으로 알아 볼 것 같다.
- 16. 어떤 회원들은 내가 어떻게 생겼는지 짐작할 것 같다.
- 17. 어떤 회원들은 나와 내가 올렸던 사진들을 연결하여 나를 알아볼 것 같다.

**Other-Anonymity** 

타인 익명성 정의: 다른 사람이 누구인지 알아볼 수 없다는 인식. 타인에 대한 신원정보가 부족하다는 인식. 한 사람의 신원을 알려주는 정보는 다섯가지 타입으로 나뉜다. 실명 혹은 가명 (별명, 사용자아이디, ...); 소재확인성 (우편주소, 이멜주소, IP 주소, 전화번호, ...); 사회적 분류 (인구통계학적 특성, 소속된 단체, 취미, ...); 의사소통 패턴 및 양식; 음성 및 시각 정보 (사진, 배경음악, ...)

18. 나는 어떤 회원들의 이름을 구별할 수 있다. 19. 나는 어떤 회원들의 사용자아이디를 구별할 수 있다. 20. 나는 어떤 회원들의 이멜주소나 홈페이지 주소를 알아 낼 수 있을 것 같다. 21. 나는 어떤 회원들의 집주소나 전화번호를 알아 낼 수 있을 것 같다. 22. 나는 아이피주소로 어떤 회원들은 누구인지 알아본다. 23. 나는 때때로 다른 회원들의 나이를 추측할 수 있다. 24. 나는 때때로 다른 회원들의 결혼상태를 추측할 수 있다. 25. 나는 때때로 다른 회원들이 직장을 다니는지 혹은 어떤 직업을 가지고 있는지 추측할 수 있다. 26. 나는 때때로 다른 회원들의 교육정도를 추측할 수 있다. 27. 나는 때때로 다른 회원들의 가계수입 정도를 추측할 수 있다. 28. 나는 때때로 다른 회원들의 자녀 수와 아이들의 나이를 추측할 수 있다. 29. 나는 때때로 다른 회원들의 취미나 관심사를 추측할 수 있다. 30. 나는 글 쓰는 스타일로 다른 회원들이 누구인지 알아 볼 수 있다. 31. 나는 자주 쓰는 표현이나 단어로 다른 회원들이 누구인지 알아 볼 수 있다. 32. 나는 해당 주제에 대해 접근하는 방식으로 다른 회원들이 누구인지 알아볼 수 있다. 33. 나는 다른 회원들이 어떻게 생겼는지 짐작할 수 있을 것 같다.

34. 나는 때때로 회원들과 그들이 올린 사진들을 연결시켜 알아 볼 수 있을 것 같다.

#### **Online Public Disclosure**

온라인 대중 공개성 정의: 온라인 커뮤니티에서 다른 회월들과 자신의 내면적 자아를 기꺼이 공유하는 것. 회원들은 이러한 공개를 통해 관계적 지원을 얻을 것으로 기대함과 동시에 자기 공개를 통한 위험에 대해서도 잘 알고 있다. 즉, 자기 공개가 다른 회원들에게 미칠 수 있는 부정적 이미지에 대해 우려한다. 온라인 커뮤니티에서 이멜이나 쪽지기능을 통해 특정 개인을 상대로한 자기 공개가 아니라, 온라인 커뮤니티의 모든 회원들을 대상으로, 공공 게신판을 통한 자기 공개. 자기를 공개하는 사람도 자신의 글이 올려진 게시판에 모든 회원들이 접근 가능하다는 것을 알고 있을 때.

35. 기꺼이 내 자신에 대한 부정적인 사실도 밝힐 수 있다.
36. 기꺼이 나의 가장 사적인 감정도 드러낼 수 있다.
37. 기꺼이 내가 잘 못 했던 일들에 대해 이야기할 수 있다.
38. 기꺼이 내 가족, 친구들 혹은 직장 동료들과는 나누지 않을 것들도 이야기할 수 있다.
39. 기꺼이 나의 창피했던 경험들에 대해서 이야기할 수 있다.
40. 기꺼이 나의 상처받은 감정에 대해서 이야기 할 수 있다.
41. 기꺼이 나의 실패에 대해서 이야기할 수 있다.
42. 기꺼이 내 가족사나 비밀을 나눌 수 있다.

#### **Group Identification**

집단 동일감 정의: 자기 자신을 자신이 속한 집단과 동일시하는 것.

43. 내가 이 온라인 커뮤니티에 기여할 바가 별로 없는 듯 하다.
44. 나는 이 온라인 커뮤니티의 아마 가장 기여도가 낮은 회원 중 하나일거다.
45. 나는 이 온라인 커뮤니티에 가입한 것을 후회한다.
46. 나는 이 온라인 커뮤니티 회원이란 사실을 아무한테도 말하지 않는다.
47. 이 온라인 커뮤니티는 아주 유익한 단체이다.
48. 이 온라인 커뮤니티 회원이란 사실이 부끄럽다.
49. 내가 이 온라인 커뮤니티 회원인 것과 내가 내 자신을 어떻게 보는가는 별 상관이 없다.
50. 이 온라인 커뮤니티는 내가 누구인가를 보여준다.
51. 나는 이 온라인 커뮤니티의 다른 회원들과 다르다.
52. 나는 다른 사람들과 이야기할 때 종종 이 온라인 커뮤니티를 언급하곤 한다.
53. 나는 이 온라인 커뮤니티의 회원들과 교류하는 것을 즐긴다.

#### **Evaluation Concern**

평가 우려성 정의: 다른 사람들이 자신의 말과 행동을 어떻게 평가할 것인가에 대해 걱정하는 것.

54. 다른 회원들이 나에게 동의하지 않을 것이다.
55. 다른 회원들이 내가 쓴 내용을 비판할 것이다.
56. 다른 회원들이 나를 오해할 것이다.
57. 다른 회원들이 내가 쓴 내용을 싫어할 것이다.
58. 다른 회원들이 나를 비웃을 것이다.
59. 다른 회원들이 내가 올린 글이나 사진을 비난할 것이다.
60. 다른 회원들은 내가 올린 글이나 사진을 비난할 것이다.
61. 나는 내가 올린 글이나 사진들로 인해 소외될 것이다.
62. 나는 내가 올린 글이나 사진들로 인해 놀림받을 것이다.

#### **Needs for Social Support**

주위사람들로부터의 지원에 대한 필요 정의: 다른 사람들로부터의 지원을 필요로 할 때 주위에 도움을 줄 만한 사람이 없다는 주관적 인식.

63. 내가 미국생활의 어려움으로 힘들어 할 때, 내 얘기를 들어줄 만한 사람이 주위에 있었으면 한다.
64. 내가 결혼생활에 문제가 생겼을 때, 내 얘기를 들어줄 만한 사람이 주위에 있었으면

한다. 65. 시댁식구들에 대한 내 불평을 들어줄 만한 사람이 주위에 있었으면 한다.

66. 어떤 일이 잘 못 되었을 때, 조언을 구할 수 있는 사람이 주위에 있었으면 한다.

67. 내 문제들을 상의할 사람이 주위에 있었으면 한다.

68. 어떤 일에 대해 결정을 내려야 할 때, 도움을 줄만한 사람이 주위에 있었으면 한다.

69. 진정으로 신뢰할 수 있는 조언을 해 줄 사람이 주위에 있었으면 한다.

70. 내 문제들을 해결하는 방식에 대해 객관적인 피드백을 줄 사람이 주위에 있었으면 한다.

71. 사람들이 나에 대해 많이 신뢰했으면 한다.

72. 지극히 개인적인 걱정이나 두려움을 나눌 사람이 주위에 있었으면 한다.

73. 다른 사람들 만큼 친구들과 친밀한 관계를 유지했으면 한다.

# APPENDIX A-2

Pretest Protocol and Sorting Instruction - English

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## **Sorting Instruction**

You are given six blue cards and 73 yellow cards. Each blue card has a concept (a term that represents a particular phenomenon of interest under study) and its definition (statement/s that explain/s what the term means). Each yellow card has a statement that is an example of one of the phenomena represented by concepts on blue cards. The statements are to be used as questionnaire items in a survey.

The six blue cards list six ways in which people feel about themselves in their daily lives and how *MissyUSA* members feel about themselves when they participate in *MissyUSA*. The 73 yellow cards contain statements that exemplify the seven ways. Now, let us start to sort yellow cards according to blue cards. Sitting at a desk may be more convenient to you.

- 1. Carefully read the six blue cards. Ask the researcher about what you do not understand. Only after you completely grasp the idea of each concept and accept its definition on each blue card, proceed to the next step.
- 2. Spread the blue cards in a row on a desk.
- 3. Read through the yellow cards and ask the researcher if you have any question.
- 4. Read each of the yellow cards again, carefully this time. Place each yellow card under a blue card on which you think the yellow card statement best exemplifies the term. Sort all yellow cards in the same way. The number of yellow cards is not the same for each blue card (you do not have to place an equal number of yellow cards under each blue card).
- 5. Write down your sorting result in Table 1. The first row of the table contains concepts on blue cards. Enter yellow card statement numbers in blanks under each concept in the table.
- 6. Evaluate each item according to how well it reflects the concept based on the given definition using the following seven-point scale.
  - 1: Very clearly unrepresentative 3: Unrepresentative to some extent
- 2: Clearly unrepresentative
- 4: Neutral
- 5: Representative to some extent 6: Clearly representative
- 7: Very clearly representative

o. Clearly representative

Please write the number next to each item in Table 1, using the response choices given above.

7. Provide comments on unclear and inappropriate items.

Table 1. Sorting Res	ult
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Self- Anonymity		Other- Anonymity		Online Public Disclosure		Group Identification		Evaluation Concern		Need for Social Support	
Stmnt	Rating	Stmnt	Rating	Stmnt No	Rating	Stmnt	Rating	Stmnt	Rating	Stmnt	Rating
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#### Concepts, Definitions, and (Candidate) Items

Self-Anonymity

Self-anonymity is defined as the degree of feeling that the self is unknown or not identifiable to others. It is a perceived lack of identity information about the self given to others. There are five types of identity information signifying one's identity: Name or pseudonym (nickname, username, ...); Locatability (mail address, email address, IP address, phone number, ...); Social categorization (demographics, organizational memberships, hobby, ...); Communication pattern and style; Audio-visual information (pictures, background music,

...)

- 1. Some members can recognize my name.
- 2. Some members can recognize my username.
- 3. Some members may find out my email address or homepage address.
- 4. Some members may find out my mail address or telephone number.
- 5. Some members can recognize my IP address.
- 6. Some members can guess how old I am.
- 7. Some members can tell my marital status.
- 8. Some members can tell my profession.
- 9. Some members can tell how much education I have had.
- 10. Some members can tell our household income level.
- 11. Some members can tell how many children I have and their age.
- 12. Some members can tell my hobbies or interests.
- 13. Some members can recognize me from my writing style.
- 14. Some members can recognize me from expressions or words I use frequently.
- 15. Some members can recognize me from the way I approach the topic covered.
- 16. Some members may imagine how I look (my appearance).
- 17. Some members may match me with pictures I posted.

#### **Other-Anonymity**

Other-anonymity is defined as the degree of feelings that individuals do not know or cannot identify others. That the self lacks identity information about others, is a subjective perception. There are five types of identity information signifying one's identity: Name or pseudonym (nickname, username, ...); Locatability (mail address, email address, IP address, phone number, ...); Social categorization (demographics, organizational memberships, hobby, ...); Communication pattern and style; Audio-visual information (pictures, background music, ...)

- 18. I can recognize the names of some members.
- 19. I can recognize usernames of some members.
- 20. I may find out email addresses or homepage addresses of some members.
- 21. I may find out mail addresses or telephone numbers of some members.
- 22. I can recognize some members via their IP addresses.
- 23. Sometimes, I can guess how old other members are.
- 24. Sometimes, I can tell the marital status of other members.
- 25. Sometimes, I can tell the profession of other members.
- 26. Sometimes, I can tell how much education other members have had.
- 27. Sometimes, I can tell the household income level of other members.
- 28. Sometimes, I can tell how many children other members have and how old they are.
- 29. Sometimes, I can tell hobbies or interest of other members.
- 30. I can recognize some members from their writing styles.
- 31. I can recognize some members from expressions or words they use frequently.
- 32. I can recognize some members from the way they approach the topic covered.
- 33. Sometimes, I can imagine how other members look (their appearance).
- 34. Sometimes, I can match other members with pictures they posted.

#### **Online Public Disclosure**

Online public disclosure is defined as the willingness to share the core self with other members. Although the disclosing member seeks social support as a reward, the member is also aware of risks associated with the disclosure. They are concerned about negative impressions that the disclosure would make on other members. This refers not to a willingness toward specific members through private interaction like personal emails or built-in memo functions, but to a willingness to reveal such content to the whole community as an audience by publicly posting messages. The discloser knows that his or her message is to be posted on the community's bulletin board where all members have access.

- 35. I am willing to reveal negative things about myself.
- 36. I am willing to express my most intimate feelings.
- 37. I am willing to share what I did wrong.
- 38. I am willing to share what I would not do with my family, my off-line friends and colleagues at work.
- 39. I am willing to talk about my shameful experiences.
- 40. I am willing to talk about my hurt feelings.
- 41. I am willing to talk about my failures.
- 42. I am willing to share my family history or secrets.

#### **Group Identification**

# Group identification is defined as the degree to which one identifies oneself to one's social group.

- 43. I feel I do not have much to offer this online community.
- 44. I feel I am one of the least contributing members in this online community.
- 45. I regret I joined this online community.
- 46. I do not tell anyone that I am a member of this online community.
- 47. I feel that this online community is worthwhile.
- 48. I am ashamed to be a member of this online community.
- 49. My membership in this online community has little to do with how I feel about myself.
- 50. I think of this online community as part of who I am.
- 51. I see myself as different from other members of this online community.
- 52. I often cite this online community when I talk to others off-line.
- 53. I enjoy interacting with the members of this online community.

#### **Evaluation Concern**

# Evaluation Concern is defined as the tendency of people to be concerned about how others evaluate what they say or do.

- 54. Other members will disagree with me.
- 55. Other members will criticize what I posted.
- 56. Other members will misunderstand me.
- 57. Other members will dislike what I posted.
- 58. Other members will laugh at me.
- 59. Other members will disapprove of what I posted.
- 60. Other members will oppose what I posted.
- 61. I will be rejected for what I posted.
- 62. I will be ridiculed for what I posted.

#### **Need for Social Support**

# Needs for social support refers to the subjective perceptions of the extent to which there are few people in one's social circle who are available when one is in need of social support.

- 63. I wish I had someone who listens to me when I struggle with my life in the U.S.
- 64. I wish I had someone who listens to me when I have a marital problem.
- 65. I wish I had someone who listens to my complaints about in-laws.
- 66. I wish I had someone whom I can ask for advice when things go wrong.
- 67. I wish I had someone with whom I can talk about my problems.
- 68. I wish I had I someone who helps me decide things.
- 69. I wish I had someone whose advice I really trust.
- 70. I wish I had someone who can provide objective feedback about how I am handling my problems.
- 71. I wish people had confidence in me.
- 72. I wish I had someone with whom I can share my most private worries and fears.
- 73. I wish I were as close to my friends as are many other people.

## APPENDIX B-1

Pretest Consent Form - Korean

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## 연구 참가 동의서

## 연구제목: 온라인 커뮤니티상의 인지적 익명성 스케일 개발에 관한 연구

연구자: Robert LaRose 교수 Email. <u>larose@msu.edu</u> Tel.353-6336 윤해진, 박사과정 Email. <u>vunhae@msu.edu</u> Tel. 485-3852 Department of Telecommunication, Information Studies, and Media Michigan State University

인터넷을 통해 만난 사람들과 필요한 정보를 교환하고 감정적인 지원을 나누는 사람들의 숫자가 점차 늘어가고 있습니다. 온라인 커뮤니티 참여에 영향을 미치는 여러 요인들 중, 본 연구는 인지적 익명성에 초점을 맞추고 있습니다. 즉, 인지적 익명성이 사람들이 온라인 상에서 자기 자신에 대해 이야기 하는 방식에 어떤 영향을 미치는가에 관한 연구입니다.

온라인 커뮤니티의 한 예라 할 수 있는 MissyUSA 의 회원들이 MissyUSA 를 이용하면서 자신들에 대해 어떻게 느끼는가를 표현한 문장들이 적힌 카드들을 나누어 드릴 것입니다. MissyUSA 의 회원이시기에 본 연구에의 참여를 부탁드리게 되었습니다. 함께 나누어 드릴 설명서에 따라 카드들을 분류해 주시면 되고, 여러분 자신의 MissyUSA 관련 경험에 대해서는 여쭙지 않을 것입니다.

카드분류에 소요되는 예상시간은 60 분입니다. 분류결과 및 여러분이 주신 조언은 연구자 외에는 어느 누구도 여러분의 것임을 알 수 없도록 비밀을 보장해 드리며, 여러분의 프라이버시 또한 법이 허용하는 범위에서 최대한으로 보호될 것입니다. 여러분의 신원이 답변하신 내용과 연결되는 일은 없을 것 입니다. 참가 동의 절차 또한 카드 분류 절차와는 별도로 진행됩니다.

연구참여여부는 여러분의 자발적 의사에 따른 것으로, 전 절차에 참가를 동의하지 않거나, 특정 절차에 대한 참가만을 거부하거나, 혹은 중도에 참가를 중단하셔도 아무런 금전상 혹은 명예상의 피해가 가해지지 않습니다. 또한 어느 때라도 참가동의를 철회하실 수 있습니다.

본 연구에의 참여가 여러분께 직접적인 이익을 가져다 드리지는 않겠지만, 우리 생활 속에 점차 일상화되어가는 인터넷에 대한 이해를 증진시키는데 큰 도움이 될 것입니다. 연구참여로 인해 우려되는 위험요인은 전혀 없습니다.

본 연구에 대한 궁금한 점은 Robert LaRose 교수에게 연락바랍니다 (address: CAS 413, Dept. of Telecommunication, Information Studies and Media, Michigan State University, East Lansing, Michigan, 48824; email. <u>larose@msu.edu</u>, tel. 353-6336). 본 연구와 관련된 여러분의 권리사항에 대한 우려나 궁금한 점, 혹은 불만사항은 University Committee on Research Involving Human Subjects(UCRIHS) 위원장인 Peter Vasilenko박사에게 문의바랍니다 (address: 202 Olds Hall, East Lansing, MI 48824; email. <u>ucribs@msu.edu</u>; tel. 432-4503). 익명을 원하실 경우, 익명으로도 가능합니다.

본 연구에 참가를 동의합니다.

# **APPENDIX B-2**

Pretest Consent Form - English

## **Consent Form**

Title:

## The Creation and Validation of a Perceived Anonymity Scale Based on the Social Information Processing Model and its Nomological Network Test in an Online Social Support Community

Researchers: Prof. Robert LaRose <u>larose e msu.edu</u> USA 517 353-6336 Haejin Yun, Doctoral Candidate <u>yunhaeramsu.edu</u> USA 517 485-3852 Department of Telecommunication, Information Studies, and Media -Michigan State University

More and more people enter the Internet to meet people willing to provide information and emotional support. Among many factors related to participation in online social support communities, this study focuses on people's perceived anonymity in terms how this factor affects the way people talk about themselves online. More specifically, as a preliminary step, the purpose of the present study is to generate questionnaire items to be used in a survey.

You will be given index cards of statements describing how people might feel about themselves while participating in *MissyUSA*, an online social support community. You are asked to participate in this study because you are a member of *MissyUSA*. During the study, you will not be asked about yourself, but only will be asked to sort the statement cards according to the instruction.

The sorting should take about 60 minutes to complete. Your sorting result and comments will be kept confidential, and your privacy will be protected to the maximum extent allowable by law. Your identity will not be associated with answers you provide. This consent form will be collected separately from your sorting.

Your participation in this study is completely voluntary, and you may choose not to participate at all, you may refuse to participate in certain procedure, or you may discontinue your participation at any time without penalty. You also may withdraw your consent to participate at any time, without penalty.

While this study is not expected to yield any immediate benefit to individual participants, it will add to the general store of knowledge about people and the Internet. There are no anticipated risks associated with participation.

If you have any question on this study, please contact the investigator (Professor Robert LaRose), at CAS 413, Department of Telecommunication, Information Studies and Media, Michigan State University, East Lansing, Michigan, 48824; <u>laroseid insuredu</u> and/or phone USA 517 353-6336. If you have any question or concerns regarding your rights as a study participant or at any time are dissatisfied with any aspect of this study, you may contact – anonymously if you wish – Peter Vasilenko, Ph.D., Chair of the University Committee on Research Involving Human Subjects (UCRIHS); <u>ucrihstamsu.edu</u> and/or phone USA 517 432-4503 and/or regular mail at 202 Olds Hall, East Lansing, MI, 48824 USA.

Your signature below indicates your voluntary agreement to participate in this study.

Name

Signature

Date

# APPENDIX C-1

Online Survey Consent Form - Korean

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## 연구 참가 동의서

### Title: 온라인 커뮤니티에서의 익명성과 자기 공개성

연구자:	Robert LaRose 교수	Email. larose@msu.edu Tel. 517-353-6336				
	윤해진, 박사과정	Email. yunhae@msu.edu	Tel. 517-485-			

3852

#### Department of Telecommunication, Information Studies, and Media

온라인 커뮤니티를 통해 만난 사람들과 필요한 정보를 교환하고 정서적 교류를 나누며 실제로 만나보지 못한 사람들에게도 자기 자신의 심정을 드러내고 보다 솔직해 지는 사람들의 숫자가 점차 늘어가고 있습니다. 온라인 커뮤니티 참여에 영향을 미치는 여러 요인들 중, 본 연구는 인지적 익명성에 초점을 맞추고 있습니다. 즉, 인지적 익명성이 사람들이 온라인 상에서 자기 자신에 대해 이야기하는 방식에 어떤 영향을 미치는가에 관한 연구입니다. 본 설문조사에서는 일상 생활 가운데서, 그리고 여러분이 회원으로 참여하고 있는 온라인 커뮤니티에서, 여러분 자신에 대해 어떻게 느끼시는 가에 대해 여쭐 것입니다.

설문조사에 소요되는 예상 시간은 30 분정도 입니다. 설문조사 참여는 전적으로 여러분의 자발적 의사에 달려 있으며, 참여를 결정하셨다면 진심으로 감사드립니다. 답변해 주신 내용에 대해서는 비밀을 지켜드릴 것이며, 법이 허락하는 한도내에서 최대한으로 여러분의 프라이버시를 보장해 드립니다. 온라인 서베이 사이트는 상업용 인터넷 사이트가 자주 이용하는 쿠키 (cookie)와 같은 여러분의 신원이 노출될 우려가 있는 기술은 전혀 사용하지 않습니다. 여러분의 답변내용은 다른 참가자들의 답변과 함께 통계처리되어 보고될 것이며, 상기 명시된 연구자들만 설문조사 데이터를 열람할 수 있습니다. 특정 질문에 대해서 원하신다면 답변하지 않으셔도 되며, 언제든지 설문조사 참여를 철회하실 수 있습니다.

설문조사 마지막에 사용자 아이디와 이멜주소를 기입하는 것 또한 전적으로 여러분의 자발적 의사에 따릅니다. 다만, 사용자 아이디와 이멜주소는 설문조사에 응해 주신 답례로 온라인 상품권을 보내 드리는데 필요합니다. 설문조사를 끝까지 마치셨는지 확인 후 이틀 내로 미화 5 불 상당의 Amazon.com 상품권을 이멜주소로 보내드릴 예정입니다. 사용자 아이디와 이멜주소는 상품권을 받으신 후 여러분의 신원보장을 위해 삭제될 것입니다.

본 연구에의 참여가 여러분께 직접적인 이익을 가져다 드리지는 않겠지만, 우리 생활 속에 점차 일상화되어가는 인터넷에 대한 이해를 증진시키는데 크게 기여할 것입니다. 연구참여로 인해 여러분께 우려되는 위험요인은 전혀 없습니다.

본 연구에 대한 궁금한 점은 Robert LaRose 교수에게 연락바랍니다 (Address: CAS 413, Dept. of Telecommunication, Information Studies and Media, Michigan State University, East Lansing, Michigan, 48824; Email. <u>larose@msu.edu</u>, Tel. 517-353-6336). 본 연구와 관련된 여러분의 권리사항에 대한 우려나 궁금한 점, 혹은 불만사항은 University Committee on Research Involving Human Subjects(UCRIHS) 위원장인 Peter Vasilenko 박사에게 문의바랍니다 (Address: 202 Olds Hall, East Lansing, MI 48824; Email. <u>ucrihs@msu.edu</u>; Tel. 517-432-4503). 익명을 원하실 경우, 익명으로도 가능합니다.

본 연구에 참여하길 원하시면, 아래의 링크를 클릭해 주시기 바랍니다.

# **APPENDIX C-2**

Online Survey Consent Form - English

#### **Consent Form**

#### Title: Perceived Anonymity and Online Self-Disclosure in an Online Social Support Community

## Researchers: Prof. Robert LaRose <u>larose@insu.edu</u> USA 517 353-6336 Haejin Yun, Doctoral Candidate <u>yunhae@insu.edu</u> USA 517 485-3852 Department of Telecommunication, Information Studies, and Media -Michigan State University

More and more people enter the Internet to meet people willing to provide information and emotional support, and tend to disclose themselves to people whom they never have met before in person. Among many factors related to the participation in online social support communities, this study focuses on people's perceived anonymity in terms of how this factor affects the way people talk about themselves online. For this purpose, this survey asks how you feel about yourself in your daily life and in an online community where you have membership.

This online survey will take 30 minutes or less to complete. Participation is completely voluntary but, of course, greatly appreciated. Your responses to this survey will remain strictly confidential. Your privacy will be protected to the maximum extent allowable by law. The online survey site does not utilize any device such as cookie for tracking your identity as commercial sites usually do. Your answer will be aggregated in a summary report. Only the researchers listed above will be allowed access to the data. You may decline to answer certain questions or at any point may discontinue your participation.

Providing your user ID and email address at the end of the survey is completely voluntary, but those details will be used to send you an electronic gift certificate in appreciation of your participation and completion of the survey. Within a couple of days after it is confirmed that you completed the survey, an Amazon.com electronic gift certificate in the amount of US\$5 will be delivered to your email account. After you receive a certificate, your user ID and email addresses will be deleted from the data set, to protect your identity.

While this study is not expected to yield any immediate benefit to individual participants, it will add to the general store of knowledge about people and the Internet. There are no anticipated risks associated with participation.

If you have any question on this study, please contact the investigator (Professor Robert LaRose), at CAS 413, Department of Telecommunication, Information Studies and Media, Michigan State University, East Lansing, Michigan, 48824; <u>larose@msu.cdu</u> and/or phone USA 517 353-6336. If you have any question or concerns regarding your rights as a study participant or at any time are dissatisfied with any aspect of this study, you may contact – anonymously if you wish – Peter Vasilenko, Ph.D., Chair of the University Committee on Research Involving Human Subjects (UCRIHS); <u>ucrihs@msu.edu</u> and/or phone USA 517 432-4503 and/or regular mail at 202 Olds Hall, East Lansing, MI, 48824 USA.

#### If you wish to participate, please indicate by clicking on the link below.

# APPENDIX D

Banner Advertisement for Subject Recruitment

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Page 1. "No one recognizes who you are in an online community?" "Do you recognize anyone in an online community?" "How much do you disclose yourself in an online community?"

Page 2. "Survey that all participants win prizes" "Anonymity and Self-Disclosure in Online Communities" "Eligibility – Online community member" "Researcher – Haejin Yun (Doctoral Candidate), Michigan State University, yunhac<u>aemsu.edu</u>"

Page 3. "Participate and win an Amazon gift certificate!" "The first 300 participants will receive a \$5 online gift certificate."

Page 4. "For details and participating in the survey, click here." "Researcher – Haejin Yun (Doctoral Candidate), Michigan State University, yunha.comsu.edu"

# APPENDIX E-1

Online Survey Questionnaire - Korean

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**PART 1/4** 

여러분께서는 여러분이 회원으로 참여하고 있는 온라인 커뮤니티의 설문 참가자 모집 배너 광고를 통해 본 설문조사 사이트를 방문하시게 되었습니다. 본 설문온 바로 그 온라인 커뮤니티에서의 여러분의 경험과 일상생활에서 여러분 자신에 대해 느끼는 점을 여쭙고자 합니다.

설문의 첫번째 부분인 1~5 번은, 설문 참가자 모집 배너 광고를 접하신 온라인 커뮤니티에 대한 기본적인 설문입니다.

1. 해당 온라인 커뮤니티의 회원으로 가입하신지 얼마나 되셨나요?

\_\_\_\_ 년 \_\_\_\_ 개월

- 2. 해당 온라인 커뮤니티는 몇 명 정도의 회원이 있다고 생각하십니까?
  - a. 5.000 명 미만
  - b. 5,000~9,999 명
  - c. 10,000~14,999 명
  - d. 15,000~19.999 명
  - e. 20,000~24,999 명
  - f. 25,000~29,999 명
  - g. 30,000~34,999 명
  - h. 35,000~39,999 명
  - i. 40.000~44.999 명
  - j. 45.000~49.999 명
  - k. 50,000 명 이상이라고 생각되시면 구체적인 숫자를 적어주세요.\_\_\_\_\_ 명

3. 해당 커뮤니티의 하루 평균 방문자수는 몇 명정도 된다고 생각하십니까?

- a. 1.000 명 미만
- b. 1.000~1,999 명
- c. 2,000~2,999 명
- d. 3,000~3,999 명
- e. 4,000~4,999 명
- f. 5.000~5.999 명
- g. 6,000~6,999 명
- h. 7,000~7,999 명
- i. 8,000~8,999 명
- j. 9,000~9,999 명
- k. 10.000~10.999 명
- 1. 11,000~11,999 명
- m. 12.000~12.999 명
- n. 13,000~13,999 명
- o. 14.000~14.999 명
- p. 15,000~15,999 명
- q. 16,000~16,999 명
- r. 17,000~17,999 명
- s. 18,000~18,999 명
- t. 19,000~19,999 명
- u. 20,000 명 이상이라고 생각되시면 구체적인 숫자를 적어주세요.\_\_\_\_\_ 명
- 해당 커뮤니티에서 여러분이 가장 애용하는 게시판을 떠올려 주세요. 다음 중 어느 경우에 해당 합니까?

a. 글이나 사진을 올릴 때, 내 이름이나 아이디를 반드시 밝혀야 한다. b. 글이나 사진을 올릴 때, 내 이름이나 아이디를 밝히지 않아도 된다.

5. 평균적으로 몇 명의 회원이 여러분이 가장 애용하는 게시판에 올려진 글들을 읽는다고 생각하십니까? (게시판 글들의 조회수를 참고로 답변해 주세요.) \_\_\_\_\_ 명

#계속해서 6~12 번의 설문에 답변하실 때도, 설문 참가자 모집 광고를 접하셨던 온라인 커뮤니티에 대하여 답변해 주시기 바랍니다.

- 올려진 글 (혹은 사진) 들을 읽기만 하는 경우와 자신의 글 (원글과 답글 포함) 이나 사진을 올리는 경우를 모두 포함하여. 얼마나 자주 해당 온라인 커뮤니티를 방문하십니까? 여러분의 경우에 가장 가까운 답변을 선택해 주세요.
  - a. 거의 매일 (일주일에 5~7일)
  - b. 일주일에 삼사일
  - c. 일주일에 하루 이틀
  - d. 한달에 이삼일
  - e. 한달에 하루
  - f. 두서너달 (2~4)개월에 하루
  - g. 5~7 개월에 하루
  - h. 8~10 개월에 하루
  - i. 11~12 개월에 하루
  - j. 1년에 하루 보다 더 드물게
- 7/8. 올려진 글(혹은 사진)들을 읽기만 하는 경우와 자신의 글(원글과 답글 포함) 이나 사진을 올리는 경우를 모두 포함하여, 평균적으로 몇 일 해당 커뮤니티를 방문하십니까?
   7 번이나 8 번 중 더 편하신 쪽으로 답해주세요.
- 7. 일주일에 ()일
- 8. 한달에 ()일 (1 이하 소수점 자리 숫자로도 답변이 가능합니다. 예를 들어, 두달에 하루일 경우, 0.5 를 기입해 주세요.)
- 9. 해당 온라인 커뮤니티를 방문하는 날에는, 올려진 글(혹은 사진)들을 읽기만 하는 경우와 자신의 글(원글과 답글 포함) 이나 사진을 올리는 경우를 모두 포함하여, 하루 평균 어느 정도의 시간을 그 곳에서 보내십니까? () 시간 () 분
- 10. 궁금한 것을 묻거나, 유용한 정보를 나누거나, 여러분의 심정이나 생각을 쓰거나, 답글을 달거나, 사진을 올리는 등, 얼마나 자주 해당 커뮤니티에 글 혹은 사진을 올리십니까? 여러분의 경우에 가장 가까운 답변을 선택해 주세요.
  - a. 거의 매일 (일주일에 5~7일)
  - b. 일주일에 서너번
  - c. 일주일에 한두번
  - d. 한달에 두세번
  - e. 한달에 한번
  - f. 두서너달 (2~4)개월에 한번
  - g. 5~7 개월에 한번
  - h. 8~10 개월에 한번
  - i. 11~12 개월에 한번
  - j. 1년에 한번 보다 더 드물게

- 11. 궁금한 것을 묻거나, 유용한 정보를 나누거나, 여러분의 심정이나 생각을 쓰거나, 답글을 달거나, 사진을 올리는 등, 한달에 평균 몇 개의 글 (혹은 사진)을 해당 커뮤니티에 올리십니까?
  ()개(1이하 소수점 자리 숫자로도 답변이 가능합니다. 예를 들어, 두달에 한 개일 경우, 0.5 를 기입해 주세요.)
- 12. 해당 온라인 커뮤니티에 글 (원글과 답글 포함)이나 사진을 올릴 때, 글 또는 사진 하나 당 평균적으로 어느 정도의 시간이 걸리십니까?
  ( )시간( )분

PART 2/4

이제, 여러분이 온라인 커뮤니티에 참여하실 때, 여러분 자신에 대해 어떻게 느끼시는지 여쭙고자 합니다. 설문 참가자 모집 배너 광고를 접하셨던 온라인 커뮤니티에 대하여 답변해 주시기 바랍니다. 각각의 문장이 여러분이 느끼시는 바를 어느 정도 정확히 나타내는지 7 점 척도로 답해 주시기 바랍니다.

1 전혀 그렇지 않다; 2 그렇지 않다; 3 별로 그렇지 않다;

4 보통이다;

5 조금 그렇다; 6 그렇다; 7 아주 그렇다

1	2	3	4	5	6	7
← 그렇지	시 않다					그렇다 →

13. 어떤 회원들은 내 이름을 알아볼 것 같다. 14. 어떤 회원들은 내 사용자아이디를 알아볼 것 같다. 15. 어떤 회원들은 내 이멜주소나 홈페이지주소를 알아 낼 수 있을 것 같다. 16. 어떤 회원들은 내 아이피주소를 알아 볼 것 같다. 17. 어떤 회원들은 내 나이를 추측할 수 있을 것 같다. 18. 어떤 회원들은 나의 결혼 상태를 추측할 수 있을 것 같다. 19. 어떤 회원들은 내가 직장을 다니는지 혹은 직업이 무엇인지 알아볼 것 같다. 20. 어떤 회원들은 내 교육정도를 알아 볼 것 같다. 21. 어떤 회원들은 우리 가정의 수입정도를 알아 볼 것 같다. 22. 어떤 회원들은 내 취미나 관심사를 알아볼 것 같다. 23. 어떤 회원들은 내가 누구인지 나의 글 쓰는 스타일로 알아 볼 것 같다. 24. 어떤 회원들은 내가 누구인지 내가 자주 쓰는 표현이나 단어로 알아 볼 것 같다. 25. 어떤 회원들은 나와 내가 올렸던 사진들을 연결하여 나를 알아볼 것 같다. 26. 나는 어떤 회원들의 이름을 구별할 수 있다. 27. 나는 어떤 회원들의 사용자아이디를 구별할 수 있다. 28. 나는 어떤 회원들의 이멜주소나 홈페이지 주소를 알아 낼 수 있을 것 같다. 29. 나는 아이피주소로 어떤 회원들은 누구인지 알아본다. 30. 나는 때때로 다른 회원들의 나이를 추측할 수 있다. 31. 나는 때때로 다른 회원들의 결혼상태를 추측할 수 있다. 32. 나는 때때로 다른 회원들이 직장을 다니는지 혹은 어떤 직업을 가지고 있는지 추측할 수 있다. 33. 나는 때때로 다른 회원들의 교육정도를 추측할 수 있다. 34. 나는 때때로 다른 회원들의 가계수입 정도를 추측할 수 있다. 35. 나는 때때로 다른 회원들의 취미나 관심사를 추측할 수 있다. 36. 나는 글 쓰는 스타일로 다른 회원들이 누구인지 알아 볼 수 있다. 37. 나는 자주 쓰는 표현이나 단어로 다른 회원들이 누구인지 알아 볼 수 있다.

38. 나는 때때로 회원들과 그들이 올린 사진들을 연결시켜 알아 볼 수 있을 것 같다. 39 이 온라인 커뮤니티에서는 기꺼이 내 자신에 대한 부정적인 사실도 밝힐 수 있다. 40 이 온라인 커뮤니티에서는 기꺼이 나의 가장 사적인 감정도 드러낼 수 있다. 41. 이 온라인 커뮤니티에서는 기꺼이 내가 잘 못 했던 일들에 대해 이야기할 수 있다. 42. 이 온라인 커뮤니티에서는 기꺼이 내 가족, 친구들 혹은 직장 동료들과는 나누지 않을 것들도 이야기할 수 있다. 43. 이 온라인 커뮤니티에서는 기꺼이 나의 창피했던 경험들에 대해서 이야기할 수 있다. 44 이 온라인 커뮤니티에서는 기꺼이 나의 상처받은 감정에 대해서 이야기 할 수 있다. 45. 이 온라인 커뮤니티에서는 기꺼이 나의 실패에 대해서 이야기할 수 있다. 46 이 온라인 커뮤니티에서는 기꺼이 내 가족사나 비밀을 나눌 수 있다. 47 나는 이 온라인 커뮤니티의 아마 가장 기여도가 낮은 회원 중 하나일거다. 48 이 온라인 커뮤니티는 아주 유익한 단체이다. 49. 내가 이 온라인 커뮤니티 회원인 것과 내가 내 자신을 어떻게 보는가는 별 상관이 없다. 50. 이 온라인 커뮤니티는 내가 누구인가를 보여준다. 51 나는 이 온라인 커뮤니티의 다른 회원들과 다르다. 52. 나는 다른 사람들과 이야기할 때 종종 이 온라인 커뮤니티를 언급하곤 한다. 53 나는 이 온라인 커뮤니티의 회원들과 교류하는 것을 즐긴다. 54. 다른 회원들이 내가 쓴 내용을 비판할 것이다. 55. 다른 회원들이 나를 오해할 것이다. 56. 다른 회원들이 내가 쓴 내용을 싫어할 것이다. 57. 다른 회원들이 나에게 동의하지 않을 것이다.

58. 다른 회원들은 내가 올린 글이나 사진에 반대할 것이다.

#### **PART 3/4**

이번에는 여러분의 일상생활에 대해 묻고자 합니다.

#### 주중에 (월~금)

59. 학업, 직장생활, 가사, 육아 등 일상생활을 위해 소요되는 시간을 제외한 여가시간이 주중에는 하루 평균 어느 정도나 되십니까? \_\_\_\_ 시간 \_\_\_\_ 분

#### 주말에 (토~일)

60. 학업, 직장생활, 가사. 육아 등 일상생활을 위해 소요되는 시간을 제외한 여가시간이 주말에는 하루 평균 어느 정도나 되십니까? \_\_\_\_ 시간 \_\_\_\_ 분

# 계속해서 아래의 문항에 답하실 때에도, 일상생활가운데 여러분 자신에 대해 느끼는 점을 답해 주시기 바랍니다. 각각의 문장이 여러분 자신에 대해 느끼는 바를 얼마나 정확하게 나타내고 있는지, 7 점 척도에 따라 응답해 주십시오.

- 1 전혀 그렇지 않다; 2 그렇지 않다; 3 별로 그렇지 않다;
- 4 보통이다;
- 5 조금 그렇다; 6 그렇다; 7 아주 그렇다

1	2	3	4	5	6	7
← 그렇기	지 않다					그렇다 🗲

61. 내가 미국생활의 어려움으로 힘들어 할 때, 내 얘기를 들어줄 만한 사람이 주위에 있었으면 한다.
62. 내가 결혼생활에 문제가 생겼을 때, 내 얘기를 들어줄 만한 사람이 주위에 있었으면 한다.

63. 시댁식구들에 대한 내 불평을 들어줄 만한 사람이 주위에 있었으면 한다

64. 어떤 일이 잘 못 되었을 때, 조언을 구할 수 있는 사람이 주위에 있었으면 한다.

- 65. 내 문제들을 상의할 사람이 주위에 있었으면 한다.
- 66. 어떤 일에 대해 결정을 내려야 할 때, 도움을 줄만한 사람이 주위에 있었으면 한다.
- 67. 진정으로 신뢰할 수 있는 조언을 해 줄 사람이 주위에 있었으면 한다.
- 68. 내 문제들을 해결하는 방식에 대해 객관적인 피드백을 줄 사람이 주위에 있었으면 한다.
- 69. 지극히 개인적인 걱정이나 두려움을 나눌 사람이 주위에 있었으면 한다.

### PART 4/4

본 설문에 응해 주셔서 감사드립니다. 마지막으로, 통계처리를 위한 몇가지 기본적인 질문을 드리고자 합니다. 더불어, 이메일 주소를 남겨주시면, 답례로 온라인 상품권 (미화 5 불 상당 Amaxon.com 상품권)을 보내드리겠습니다. 이메일 주소를 남기는 것은 여러분의 자발적인 의사결정에 달려 있습니다. 이메일 주소는 온라인 상품권을 받으신 것이 확인되는대로 여러분의 데이터에서 삭제될 것입니다.

70. 연령 만\_\_\_\_ 세

- 71. 미국에 거주하신지 얼마나 되셨습니까? \_\_\_\_\_년 \_\_\_\_개월
- 72. 여러분 가정의 연수입은 얼마나 되는지요?
  - a. \$30,000 미만
  - b. \$30,000~\$59,999
  - c. \$60,000~\$99,999
  - d. \$100,000 이상
- 73. 여러분의 최종학력은 어떻게 되시나요?
  - a. 고등학교
  - b. 대학교
  - c. 대학원 (석사 혹은 박사)
  - d. 기타

74. 이메일 주소를 적어주세요. \_\_\_\_\_
# APPENDIX E-2

Online Survey Questionnaire - English

## **PART 1/4**

You are led to this online survey site by clicking a banner ad for recruiting survey participants in an online community where you have membership. This survey asks you about your experiences in the online community and how you feel about yourself in daily life.

Questions 1 to 5 ask you about the online community where you were exposed to the recruitment banner ad.

- How long have you been a member of the online community? \_\_\_\_\_ year(s) \_\_\_\_\_ month(s)
- 2. How many members do you estimate the online community has?
  - a. Under 5,000
  - b. 5,000 to 9,999
  - c. 10,000 to 14,999
  - d. 15,000 to 19,999
  - e. 20,000 to 24,999
  - f. 25,000 to 29,999
  - g. 30,000 to 34,999
  - h. 35,000 to 39,999
  - i. 40,000 to 44,999
  - j. 45,000 to 49,999 k. 50,000 and over

Please specify \_\_\_\_\_

- 3. How many members do you estimate visit the online community a day?
  - a. Under 1,000
  - b. 1,000 to 1,999
  - c. 2,000 to 2,999
  - d. 3,000 to 3,999
  - e. 4,000 to 4,999
  - f. 5,000 to 5,999
  - g. 6,000 to 6,999
  - h. 7,000 to 7,999
  - i. 8.000 to 8.999
  - j. 9,000 to 9,999
  - k. 10,000 to 10,999
  - 1. 11,000 to 11,999
  - m. 12,000 to 12,999
  - n. 13,000 to 13,999
  - o. 14.000 to 14.999
  - p. 15,000 to 15,999
  - q. 16,000 to 16,999
  - r. 17.000 to 17.999
  - s. 18,000 to 18,999
  - t. 19,000 to 19,999
  - u. 20,000 and over

Please specify \_\_\_\_\_

4. Think about your favorite message board in the online community. To which case does the message board belong?

- a. The message board requires me to reveal my name and user ID when posting a message or a picture.
- b. I don't have to reveal my name or user ID when posting a message or a picture.
- How many members do you estimate read messages posted on your favorite message board on average? (You may want to look at the hit numbers for each posted message on the message board for estimation) \_\_\_\_\_ members

# # For questions 6 to 12, please continue to answer regarding the online community where you were exposed to the recruitment banner ad in mind.

- 6. How often do you visit the online community, including reading posted messages (or pictures) and posting your own messages (or pictures)? Please choose the choice that is the closest to your case.
  - a. Almost everyday (5~7 days per week)
  - b. Several days per week
  - c. One or two days per week
  - d. Two or three days per month
  - e. One day per month
  - f. One day per two to four months
  - g. One day per five to seven months
  - h. One day per eight to ten months
  - i. One day per eleven to twelve months
  - j. Less than one day per year

7/8. How many days on average do you visit the online community, including reading posted messages (or pictures) and posting your own messages (or pictures)? Please answer in a more appropriate way between #7 and #8.

## 7. ( ) days per week

- 8. ( ) days per month (You may answer in decimals. For example, if you visit the online community once per two months, please enter 0.5)
- 9. If you visit the online community, how much time do you spend, including reading posted messages (or pictures) and posting your own messages (or pictures)? ( ) hours ( ) minutes
- 10. How often do you post messages in the online community, including asking questions, sharing information, writing your feelings and thoughts, answering to others' messages, or posting pictures. Please choose the choice that is the closest to your case.
  - a. Almost everyday (5~7 days per week)
  - b. Several times per week
  - c. One or two times per week
  - d. Two or three times per month
  - e. Once per month
  - f. Once per two to four months
  - g. Once per five to seven months
  - h. Once per eight to ten months
  - i. Once per eleven to twelve months
  - j. Less than once per year

- How often do you post messages in the online community, including asking questions, sharing information, writing your feelings and thoughts, answering to others' messages, or posting pictures. ( ) times (You may answer in decimals. For example, if you visit the online community once per two months, please enter 0.5)
- 12. How much time do you spend on average when you post messages or pictures in the online community? ( ) hours ( ) minutes

# **PART 2/4**

Now, we would like to ask you how you feel about yourself when you participate in the online community in which you were exposed to the recruitment banner ad. Please indicate how much you agree with each of the following statements ranging from 1, Strongly Disagree, to 7, Strongly Agree.

- 1 Strongly Disagree; 2 Disagree ; 3 Disagree to some extent;
- 4 Neutral;
- 5 Agree to some extent; 6 Agree; 7 Strongly Agree

1	2	3	4	5	6	7
← Disag	zree					Agree 🗲

- 13. Some members can recognize my name.
- 14. Some members can recognize my username.
- 15. Some members may find out my email address or homepage address.
- 16. Some members can recognize my IP address.
- 17. Some members can guess how old I am.
- 18. Some members can tell my marital status.
- 19. Some members can tell my profession.
- 20. Some members can tell how much education I have had.
- 21. Some members can tell our household income level.
- 22. Some members can tell my hobbies or interests.
- 23. Some members can recognize me from my writing style.
- 24. Some members can recognize me from expressions or words I use frequently.
- 25. Some members may match me with pictures I posted.
- 26. I can recognize the names of some members.
- 27. I can recognize usernames of some members.
- 28. I may find out email addresses or homepage addresses of some members.
- 29. I can recognize some members via their IP addresses.
- 30. Sometimes, I can guess how old other members are.
- 31. Sometimes, I can tell the marital status of other members.
- 32. Sometimes, I can tell the profession of other members.
- 33. Sometimes, I can tell how much education other members have had.
- 34. Sometimes, I can tell the household income level of other members.
- 35. Sometimes, I can tell hobbies or interest of other members.
- 36. I can recognize some members from their writing styles.
- 37. I can recognize some members from expressions or words they use frequently.
- 38. Sometimes, I can match other members with pictures they posted.

- 39. I am willing to reveal negative things about myself in this online community.
- 40. I am willing to express my most intimate feelings in this online community.
- 41. I am willing to share what I did wrong in this online community.
- 42. I am willing to share what I would not do with my family, my off-line friends and colleagues at work in this online community.
- 43. I am willing to talk about my shameful experiences in this online community.
- 44. I am willing to talk about my hurt feelings in this online community.
- 45. I am willing to talk about my failures in this online community.
- 46. I am willing to share my family history or secrets in this online community.
- 47. I feel I am one of the least contributing members in this online community.
- 48. I feel that this online community is worthwhile.
- 49. My membership in this online community has little to do with how I feel about myself.
- 50. I think of this online community as part of who I am.
- 51. I see myself as different from other members of this online community.
- 52. I often cite this online community when I talk to others off-line.
- 53. I enjoy interacting with the members of this online community.
- 54. Other members will criticize what I posted.
- 55. Other members will misunderstand me.
- 56. Other members will dislike what I posted.
- 57. Other members will disagree what I posted.
- 58. Other members will oppose what I posted.

## **PART 3/4**

We also would like to ask you about your daily life.

#### On Weekdays (Mon to Fri)

59. How much free time – excluding housekeeping, child rearing, study, work and so on – do you have **on a typical weekday** on average? \_\_\_\_\_ hour(s) \_\_\_\_\_ minutes

#### On Weekend (Sat to Sun)

60. How much free time – excluding housekeeping, child rearing, study, work and so on – do you have on a typical weekend day on average? \_\_\_\_\_ hour(s) \_\_\_\_\_ minutes

# Please continue to answer the following questions regarding your daily life. Indicate how much you agree with each of the following statements ranging from 1, Strongly Disagree to 7, Strongly Agree.

- 1 Strongly Disagree; 2 Disagree ; 3 Disagree to some extent;
- 4 Neutral;
- 5 Agree to some extent; 6 Agree; 7 Strongly Agree

1 2 3 4 5 6 7 ← Disagree Agree →

- 61. I wish I had someone who listens to me when I struggle with my life in the U.S.
- 62. I wish I had someone who listens to me when I have a marital problem.
- 63. I wish I had someone who listens to my complaints about in-laws.
- 64. I wish I had someone whom I can ask for advice when things go wrong.

- 65. I wish I had someone with whom I can talk about my problems.
- 66. I wish I had I someone who helps me decide things.
- 67. I wish I had someone whose advice I really trust.
- 68. I wish I had someone who can provide objective feedback about how I am handling my problems.
- 69. I wish I had someone with whom I can share my most private worries and fears.

# **PART 4/4**

Thank you for responding to this survey. As the last set of questions, we would like you to answer several demographic questions. Also, if you provide your email address, we will send you an email gift certificate (\$5 Amazon.com certificate) in appreciation of your participation. They will be deleted from your data after we confirm that you receive an email gift certificate.

70. Your age? \_\_\_\_\_ years

71. How long have you lived in the United States? \_\_\_\_\_ year(s) \_\_\_\_\_ month(s)

- 72. What is the annual income level of your household?
  - a. Under \$30,000
  - b. \$30,000 ~ \$59,999
  - c. \$60,000 ~ \$99,999
  - d. \$100,000 and over

73. What is your education level?

- a. High school graduates
- b. College graduates
- c. Master's or Doctorate
- d. None of the above

74. Your email address

# APPENDIX F

Correlations for All Observed Variables

		Need for	Need for Social Support								
	PCS	nssl	nss2	nss3	nss5	nss6	nss7	nss8	nss9	nssll	
PCS											
nss l	0.019										
nss2	0.063	0.906									
nss3	0.034	0.754	0.806								
nss5	-0.002	0.810	0.835	0.768							
nss6	0.046	0.820	0.858	0.787	0.892						
nss7	0.038	0.802	0.834	0.762	0.864	0.894					
nss8	0.080	0.742	0.791	0.701	0.816	0.826	0.875				
nss9	0.066	0.764	0.784	0.711	0.808	0.826	0.870	0.858			
nssll	0.031	0.770	0.810	0.765	0.767	0.823	0.806	0.748	0.796		
ec2	-0.091	0.066	0.053	0.053	0.053	0.054	0.050	0.003	-0.006	0.027	
ec3	-0.100	0.030	0.016	0.017	0.011	0.033	0.030	-0.038	-0.042	-0.001	
ec4	-0.061	-0.021	-0.038	-0.006	-0.058	-0.012	-0.042	-0.108	-0.118	-0.041	
ec5	-0.028	-0.018	-0.021	0.008	-0.042	0.025	-0.004	-0.065	-0.071	-0.025	
ec6	-0.062	-0.001	-0.013	0.022	-0.032	0.013	-0.013	-0.075	-0.070	-0.014	
opdl	0.004	0.203	0.193	0.152	0.136	0.139	0.157	0.078	0.104	0.185	
opd2	-0.024	0.292	0.291	0.263	0.219	0.209	0.208	0.152	0.168	0.260	
opd3	-0.024	0.221	0.219	0.200	0.164	0.150	0.171	0.115	0.150	0.195	
opd4	0.090	0.280	0.273	0.287	0.230	0.214	0.234	0.184	0.210	0.271	
opdo	0.080	0.248	0.244	0.244	0.185	0.175	0.190	0.154	0.185	0.233	
opao	0.000	0.273	0.2/3	0.284	0.225	0.194	0.218	0.199	0.208	0.247	
	-0.018	0.204	0.208	0.273	0.232	0.208	0.229	0.100	0.193	0.201	
	-0.031	0.223	0.213	0.241	0.131	0.1.50	0.142	0.082	0.099	0.223	
5012	0.078	-0.121	-0.112	-0.103	-0.003	-0.093	-0.107	-0.062	-0.062	-0.095	
0212	0.103	-0.100	-0.100	-0.000	-0.001	-0.102	-0.094	-0.002	-0.002	-0.101	
col 1	0.082	-0.127	-0.105	-0.120	-0.075	-0.083	-0.030	0.007	-0.030	-0.039	
5411	0.027	-0.079	-0.003	-0.098	-0.113	-0.089	-0.124	-0.075	-0.128	-0.067	
026	0.104	-0.070	-0.066	-0.078	-0.078	-0.067	-0.124	-0.075	-0.120	0.026	
027	0.120	-0.140	-0.000	-0.020	-0.119	-0.122	-0.179	-0.000	-0.122	-0.087	
027	0.097	-0.208	-0.186	-0.160	-0 180	-0 190	-0 243	-0 160	-0 160	-0.131	
020	0.015	-0 119	-0.069	-0.081	-0.123	-0 109	-0 175	-0.140	-0.124	-0.078	
oal0	0.147	-0.178	-0.169	-0.127	-0.154	-0.191	-0.216	-0.149	-0.176	-0.128	
sal	0.007	-0.157	-0.136	-0.060	-0.059	-0.090	-0.135	-0.102	-0.073	-0.101	
sa2	0.027	-0.140	-0.130	-0.069	-0.051	-0.082	-0.123	-0.117	-0.081	-0.140	
sa3	0.017	-0.160	-0.119	-0.118	-0.061	-0.107	-0.160	-0.117	-0.120	-0.132	
sa4	0.096	-0.073	-0.055	-0.046	-0.024	-0.033	-0.084	-0.045	-0.034	-0.045	
sa5	0.122	-0.141	<b>-0</b> .089	-0.075	-0.066	-0.074	-0.109	-0.078	-0.081	-0.051	
sa7	0.131	-0.116	-0.051	-0.058	-0.032	-0.056	-0.112	-0.063	-0.090	-0.011	
sa8	0.080	-0.197	-0.150	-0.113	-0.121	-0.146	-0.209	-0.125	-0.144	-0.090	
sa9	0.058	-0.100	-0.052	-0.098	-0.034	-0.081	-0.117	-0.064	-0.056	-0.066	
Total											
М	9.256	5.252	5.213	5.039	5.219	5.306	5.367	5.548	5.449	5.186	
SD	6.095	1.466	1.510	1.624	1.474	1.483	1.442	1.390	1.384	1.540	

(contin	ued)									
	Eavalua	tion Conc		Online Public Disclosure						
	ec2	ec3	ec4	ec5	ec6	opd1	opd2	opd3	opd4	opd5
PCS										
nssl										
nss2										
nss3										
nss5										
nss6										
nss7										
nss8										
nss9										
nss11										
cc2										
ec3	0.855									
ec4	0.746	0.814								
ec5	0.737	0.809	0.856							
ec6	0.734	0.785	0.871	0.896						
opd1	0.106	0.154	0.138	0.151	0.174					
opd2	0.150	0.178	0.142	0.149	0.163	0.749				
opd3	0.139	0.165	0.131	0.152	0.194	0.789	0.864			
opd4	0.090	0.104	0.079	0.110	0.121	0.658	0.783	0.818		
opd5	0.075	0.099	0.086	0.104	0.123	0.679	0.756	0.815	0.851	
opd6	0.072	0.096	0.097	0.127	0.130	0.646	0.754	0.804	0.819	0.892
opd7	0.080	0.079	0.068	0.083	0.094	0.612	0.714	0.729	0.737	0.784
opd8	0.129	0.177	0.213	0.136	0.189	0.580	0.639	0.651	0.612	0.666
sal2	-0.214	-0.254	-0.203	-0.232	-0.238	-0.171	-0.189	-0.212	-0.191	-0.141
oa12	-0.204	-0.259	-0.175	-0.220	-0.225	-0.176	-0.231	-0.241	-0.230	-0.158
oall	-0.157	-0.217	-0.246	-0.215	-0.252	-0.143	-0.166	-0.157	-0.135	-0.109
sall	-0.188	-0.227	-0.278	-0.239	-0.266	-0.157	-0.164	-0.185	-0.144	-0.111
oa5	-0.077	-0.080	-0.082	-0.052	-0.076	-0.065	-0.074	-0.051	-0.010	-0.041
0a6	-0.059	-0.032	-0.046	-0.039	-0.058	-0.105	-0.077	-0.066	-0.009	-0.036
oa7	-0.127	-0.137	-0.134	-0.131	-0.156	-0.140	-0.125	-0.119	-0.105	-0.096
oa8	-0.086	-0.087	-0.129	-0.108	-0.147	-0.197	-0.162	-0.156	-0.153	-0.141
oa9	-0.178	-0.175	-0.218	· -0.179	-0.219	-0.114	-0.123	-0.142	-0.134	-0.132
oa10	-0.066	-0.062	-0.082	-0.080	-0.079	-0.150	-0.112	-0.107	-0.100	-0.098
sal	-0.112	-0.217	-0.198	-0.233	-0.235	-0.097	-0.097	-0.116	-0.134	-0.107
sa2	-0.046	-0.183	-0.138	-0.177	-0.154	-0.114	-0.121	-0.127	-0.154	-0.141
sa3	-0.106	-0.209	-0.193	-0.201	-0.207	-0.137	-0.060	-0.078	-0.064	-0.080
sa4	-0.176	-0.256	-0.189	-0.219	-0.220	-0.130	-0.097	-0.118	-0.106	-0.102
sa5	-0.216	-0.290	-0.194	-0.211	-0.214	-0.150	-0.155	-0.150	-0.119	-0.121
sa7	-0.191	-0.242	-0.180	-0.179	-0.188	-0.110	-0.112	-0.104	-0.110	-0.112
sa8	-0.199	-0.256	-0.188	-0.207	-0.197	-0.237	-0.142	-0.171	-0.161	-0.189
sa9	-0.266	-0.360	-0.296	-0.252	-0.298	-0.125	-0.122	-0.098	-0.070	-0.113
Total	1									
м	2.927	2.814	2.677	2.708	2.577	3.734	4.070	3.097	4.163	4.143
SD	1.354	1.378	1.285	1,271	1,240	1.715	1.697	1,700	1.743	1.714

.

	Online Public Disclosure			Discursive Anonymity				Other-Anonymity		
	opd6	opd7	opd8	sal2	oal2	oall	sall	oall	oa6	oa7
PCS										
nssl					_					
nss2										
nss3										
nss5										
nss6										
nss7										
nss8										
nss9										
nssll										
ec2										
ec3										
ec4										
ec5										
ec6										
opdl										
opd2										
opd3										
opd4										
opd5										
opd6										
opd7	0.792									
8bqo	0.648	0.745								
sal2	-0.142	-0.159	-0.126							
oa12	-0.167	-0.157	-0.144	0.844						
oall	-0.062	-0.085	-0:142	0.570	0.576					
sall	-0.086	-0.113	-0.153	0.533	0.560	0.876				
oa5	-0.030	-0.090	-0.044	0.304	0.275	0.414	0.405			
0a6	-0.014	-0.061	-0.009	0.222	0.179	0.354	0.322	0.354		
oa7	-0.076	-0.133	-0.069	0.279	0.269	0.435	0.383	0.435	0.719	
0 <b>a</b> 8	-0.106	-0.156	-0.130	0.299	0.295	0.451	0.393	0.451	0.618	0.733
oa9	-0.102	-0.124	-0.075	0.299	0.297	0.435	0.393	0.435	0.516	0.633
oa10	-0.063	-0.118	-0.078	0.372	0.322	0.507	0.431	0.507	0.572	0.571
sal	-0.115	-0.086	-0.057	0.406	0.362	0.237	0.229	0.237	0.100	0.165
sa2	-0.135	-0.075	-0.038	0.411	0.395	0.266	0.244	0.266	0.014	0.118
sa3	-0.067	-0.038	-0.084	0.503	0.457	0.350	0.328	0.350	0.094	0.233
sa4	-0.102	-0.083	-0.069	0.459	0.442	0.344	0.323	0.344	0.111	0.202
sa5	-0.138	-0.137	-0.147	0.522	0.487	0.381	0.372	0.381	0.260	0.310
sa7	-0.077	-0.071	-0.051	0.425	0.379	0.297	0.247	0.297	0.321	0.481
sa8	-0.167	-0.149	-0.092	0.428	0.390	0.292	0.281	0.292	0.379	0.443
sa9	-0.076	-0.039	-0.087	0.432	0.393	0.337	0.304	0.337	0.187	0.301
		-			-	'				
Total										
м	4.199	4.093	3.603	4.219	4.385	4.631	4.781	4.631	3.580	4.116
SD	1.724	1.714	1.794	1.691	1.669	1.715	1.704	1.715	1.678	1.578

# (continued)

	Other-Anonymity			Self-Anonymity						
	oa8	oa9	oal0	sal	sa2	sa3	sa4	sa5	sa7	sa8
PCS								-		
nssl										
nss2				ļ						
nss3										
nss5										
nss6										
nss7										
nss8										
nss9										
nssll										
ec2										
ec3										
ec4										
ec5										
ec6										
opd1										
opd2	ĺ		•							
opd3										
opd4										
opd5										
opd6										
opd7										
opd8										
sal2										
oal2										
oall										
sall										
oa5										
0a6										
oa7										
oa8										
oa9	0.648									:
oa10	0.618	0.516								
sal	0.176	0.193	0.194							
sa2	0.153	0.114	0.126	0.727						
sa3	0.178	0.177	0.213	0.569	0.631					
sa4	0.166	0.255	0.214	0.391	0.468	0.621				
sa5	0.257	0.296	0.306	0.487	0.498	0.553	0.597			
sa7	0.391	0.402	0.304	0.430	0.447	0.461	0.435	0.595		
sa8	0.457	0.374	0.307	0.354	0.375	0.423	0.396	0.541	0.683	
sa9	0.338	0.459	0.267	0.429	0.409	0.504	0.450	0.510	0.540	0.520
Total										
М	4.123	4.468	3.794	4.243	4.412	4.472	4.663	4.096	4.286	4.286
SD	1.588	1.597	1.551	1.902	1.806	1.779	1.821	1.637	1.700	1.544

		Low GI		High GI	
	sa9	М	SD	м	SD
PCS	I	8.556	5.641	10.050	6.512
nssl		4.956	1.438	5.589	1.430
nss2		4.913	1.510	5.553	1.441
nss3		4.819	1.625	5.404	1.572
nss5		5.058	1.497	5.555	1.406
nss6		5.031	1.515	5.617	1.387
nss7		5.088	1.477	5.683	1.337
nss8		5.316	1.459	5.812	1.263
nss9		5.175	1.443	5.759	1.247
nssll		4.875	1.569	5.539	1.432
ec2		2.994	1.343	2.851	1.368
ec3		2.856	1.354	2.766	1.407
ec4		2.767	1.290	2.574	1.277
ec5		2.819	1.288	2.582	1.243
ec6		2.669	1.242	2.472	1.233
opdl		3.531	1.602	3.965	1.814
opd2		3.725	1.617	4.461	1.705
opd3		3.613	1.656	4.241	1.694
opd4		3.788	1.673	4.589	1.728
opd5		3.820	1.633	4.511	1.735
opd6		3.894	1.654	4.546	1.742
opd7		3.669	1.620	4.574	1.696
opd8		3.335	1.696	3.908	1.859
sa12		4.450	1.577	3.957	4.163
oal2		4.581	1.568	4.163	1.755
oall		4.750	1.712	4.496	1.714
sall		4.888	1.656	4.660	1.756
oa5		4.119	1.472	3.851	1.617
oa6		3.669	1.628	3.479	1.734
oa7		4.188	1.493	4.035	1.671
028		4.225	1.483	4.007	1.697
oa9		4.581	1.523	4.340	1.673
oal0		3.956	1.514	3.610	1.576
sal		4.531	1.870	3.915	1.892
sa2		4.594	1.792	4.206	1.807
sa3		4.625	1.769	4.298	1.780
sa4		4.673	1.786	4.652	1.867
sa5		4.269	1.593	3.901	1.670
sa7		4.450	1.516	4.099	1.876
sa8		4.338	1.466	4.227	1.632
sa9		5.181	1.409	5.000	1.521
Total		(N=160)	)	(N=141)	)
М	5.096				
SD	1.463	1			

# (continued)

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